Response to Interview Structure Issue Paper
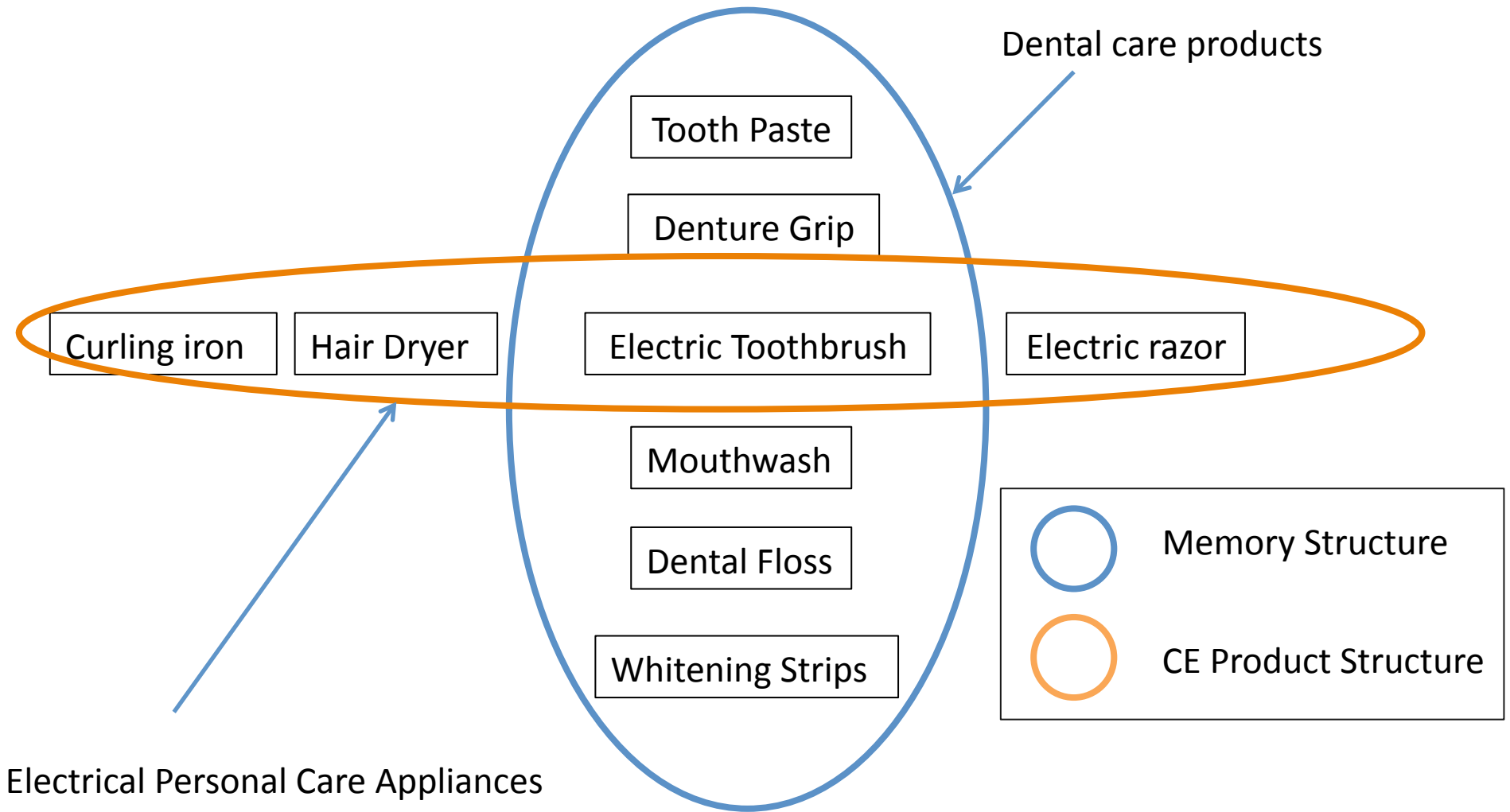
Frederick Conrad

University of Michigan

Why are expenditures are underreported?

- Main concern of "Interview Structure" issue paper is that expenditures are underreported
  - Stated more explicitly in Gemini Project Vision document, p.2
- It is proposed that
  - underreporting may be due to question order that cuts across Rs' memory for expenditures and so does not promote retrieval
  - a question order that better fits Rs' memory structures will promote more complete reporting

An Alternative Explanation

- Underreporting is not about the <u>order</u> of questions but the <u>content</u> of questions, in particular, the categories

- Rs may not think about their expenditure events, <u>at the time they occur,</u> as instances of the CE categories

- If they do not, then asking about CE categories in the interview won't bring relevant events to mind
  - irrespective of the order in which Rs are asked

Dental care products

Tooth Paste

Denture Grip

Curling iron Hair Dryer Electric Toothbrush Electric razor

Mouthwash

Dental Floss

Whitening Strips

Memory Structure

CE Product Structure

Electrical Personal Care Appliances

Underreporting Instances of *Unnatural* Categories

- Conrad, Brown & Dashen (2004) tested this idea in lab experiment
  - Study phase: participants read 109 ordinary nouns, one at a time
  - Test phase: asked how many words just studied
    - belong to particular taxonomic category
    - contain a particular property

- Study phase analogous to purchase events
- Test phase analogous to CE interview
  - Taxonomic categories – natural categories – correspond to the "dental products" in the example
  - Properties – unnatural categories – correspond to "electrical personal care products"

Taxonomic Category Group

$$\underline{\quad STUDY \quad}$$
dog
Chicago
guitar
maple
trout
violin
salmon
table
⋮

$$\underline{\quad TEST \quad}$$
TREE
FISH
FURNITURE
TOOL
⋮

Implicit Property group

STUDY

corn
ammonia
chocolate
salt
garbage
ivory
peach
daffodil
⋮

TEST

SMELLY
YELLOW
FUZZY
ROUND
⋮

Explicit Property group

STUDY

YELLOW
corn

SMELLY
ammonia

BROWN
chocolate

WHITE
salt

SMELLY
garbage

WHITE
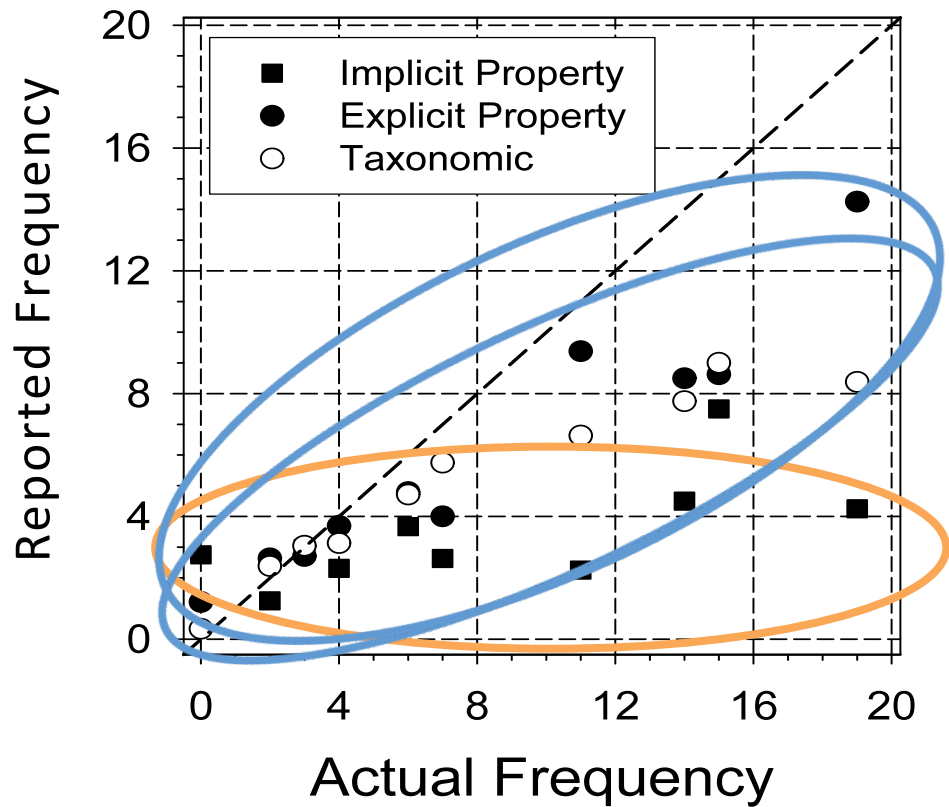ivory

YELLOW
peach

YELOW
daffodil

.

TEST

SMELLY
YELLOW
FUZZY
ROUND

Signed Error

Taxonomic: -2.95
Implicit Property: -4.73
Explicit Property: -2.12

Proportion "hits" to all enumerated items

Taxonomic: .96
Implicit Property: .38
Explicit Property: .83

Implications of Study for CE Interview

- On the downside:
  - Asking *R*s about expenditures from CE categories will not make contact with *R*s' memory for many relevant expenditures, leading to underreporting
  - If there is misalignment during purchase episode (encoding), there may be little that can done during the interview (recall) to help
- On the positive side
  - When *R*s do encode expenditures as instances of CE categories, their recall will be good
  - Might be possible to train *R*s across waves to think about expenditures as CE does

Making CE Categories Natural

- May be possible to intervene in first interview so that *R*s learn to think of their purchases, <u>when they occur</u>, as instances of CE categories

- But probably too many categories to do this exhaustively

- Could focus on those categories most at odds with *R*s' natural classification of expenditures
  - Would need to determine this with experiment like the one just described
  - May still be too many to train *R*s on all and training might not be effective

Context Reinstatement

- An alternative to training *R*s to think like CE analysts is help them recall all relevant purchases, irrespective of CE category, by helping them recall the purchase *context*

  - Since the last interview did you purchase anything online? On the phone? By mail? In drive-though outlets? In enclosed malls? In convenience stores? ...

  - If "yes," what did you purchase?

  - Any reported purchases are coded into CE categories by interviewer or coder after the fact

Context Reinstatement (2)

- *R* might indicate she made many online purchases and then list "books," "computer hardware," "cell phone service," "plane tickets" and "cosmetic surgery"

  – Note it is the *purchase* context not the *consumption* context that matters

  – *R* paid for air travel online but consumed the service in the air

Context Reinstatement (3)

- Used to improve eye witness reports as one of several memory improvement techniques known as *cognitive interviewing* (CI) (e.g., Bekerian & Dennett, 1993)
  - Not the same as pretesting method
  - Other memory improvement techniques in CI include varied physical perspective and varied recall order
  - context reinstatement probably locus improved recall in CI (Milne & Bull, 2002)

- Based on *encoding specificity* (Tulving & Thompson, 1973)

Context Reinstatement (4)

- In CI, participant generates context, e.g., of a crime, but idea for CE is to provide contexts to R
  - Should make it easier: more recognition than recall
- May be that contexts need to be presented at finer level of detail
  - e.g., "online purchases" may need to be decomposed into "online purchases that involved shipping a physical product," "online purchases of a downloadable product," and "online purchases of an offline service," etc.

Similarity to Event History Calendars

- Proposed approach has some of the character of Event History Calendars (EHC) (e.g., Belli, Shaye & Stafford, 2001)
  - Recalled context stimulates subsequent recall
  - In EHC, recall from one life theme (e.g., employment) serves as cue for retrieval of events from another theme (e.g., residential moves)
    - Parallel retrieval (Belli, 1998)
  - In current proposal, interviewer provides context
- To the extent that purchases are narratives, extended over time, the context reinstatement and EHC approaches are similar
  - But this may not often be the case

Similarity to EHC (2)

- Question order:
  - EHCs inherently unstructured
  - context reinstatement approach noncommittal:
    - contexts must be presented in some order but no theoretical guidance (yet) on whether any order produces better recall than others
    - Certainly if recalling online book purchases brings to mind book purchases in brick and mortar outlet, sensible to record those purchases at that time

Flexible Data Entry

- Issue paper describes context effects as rationale for maintaining fixed question order
- Seems low risk for in this domain
  - Hard to see how asking about *home furnishings* before *clothing* for one *R* and reverse for another introduces substantial measurement error (underrporting)
  - especially if the different orders are the result of different self-generated reminders
- Makes sense to accommodate *Rs'* preference to report on one category (or context) by allowing interviewer to enter expenditures in whatever order *R* happens to report them

Flexible Data Entry (2)

- User interfaces to promote flexible entry
  - May require moving outside Blaise comfort zone
  - Representing questionnaire as clickable network would allow direct access to any question
  - Multimodal user interfaces could allow interviewer to
    - enter notes with stylus into onscreen notepad linked to categories
    - speak notes while entering data with keypad

- Johnston (2007) argues multimodal interfaces more natural than single mode for survey interviews because support everyday practice of combining speech, pointing, and gesture as needed

Conversational Interviewing
(e.g., Schober & Conrad, 1997; Conrad & Schober, 2000)

- Issue paper points to *conversational interviewing* as example of "order-free" interviewing

- I believe this somewhat mischaracterizes the approach that Schober and I have explored which is concerned with improving *R*s understanding of individual questions, not with variable question order

- The extra time required by the approach
  - due to the time taken to clarify question meaning and help *R*s establish the correspondence between question concepts and their circumstances
  - not variable question order

Research Program and Some Questions

1. *Unnatural Categories:*
    - For which CE products are most underestimated under the current approach?
    - In what contexts are they most likely to be purchased?

2. *Context Reinstatement*
    - Does the proposed approach help Rs recover purchase events that do not come to mind when probed with CE categories?

3. *Flexible Data Entry*
    - What are the temporal costs of following respondents' unstructured recall?
    - Can interviewers do this effectively in real time?
    - What user interface approaches, e.g., what combinations of input devices and modes, best support flexible data entry in semi-structured verbal tasks?

Thank You