Comparing the Results of Check-All-That-Apply Questions versus Open-End Questions in Angel Food Cake

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INTRODUCTION

In consumer research, there is often an interest in understanding why the consumer answered hedonic or preference questions a certain way. One typical way to collect this understanding is through a follow up Open-End (OE) question. The challenge of OE questions for researchers is the time required to read participants responses, decoding spelling and grammar errors, to interpret what the participant was trying to convey. For the participant, time is taken to write or type their response. Check-All-That-Apply (CATA) questions offer participants the opportunity to read through a list of the most probable responses to the question and select those that are relevant to them. The data collected requires no additional researcher time and can be analyzed quantitatively.

Currently, there has been no published research comparing the use of CATA questions to replace OE questions.

OBJECTIVE

To determine if a Check All That Apply (CATA) question provides the same information as an Open-End (OE) question in response to "why did you prefer this sample".

METHODOLOGY

2 consumer studies were conducted at the Sensory & Consumer Research Center in Olathe, Kansas using the same samples.

Samples: Angel food cake samples were prepared at Kansas State University in Olathe, KS

Table 1. Samples

Code	Sample	Abbreviation
659	Regular Recipe Angel Food Cake	Control
720	Angel Food Cake with 25% reduced egg	Test

Recruit: (n=197)

- Male/Female at least 18 years of age
- Must have no food allergies
- Must have eaten cake in past 3 months
- Must be willing to try Angel Food Cake

Design:

Participants received one of two questionnaires (randomly assigned)

Samples were served in pairs (serving order balanced across participants)

Questionnaire:

Version 1 (CATA)	Version 2 (OE + CATA)
Paired Preference	Paired Preference
Why did you prefer? (CATA)	Why did you prefer? (Open-End)
	Why did you prefer? (CATA[1])

[1]CATA responses were created by the researcher who had experience working with the product

RESULTS

Preference:

- There was no significant difference in preference between the two cake samples using either version of the questionnaire.

Table 2. Time spent on question by OE + CATA Version participants

Test Version	# preferred Control	# preferred Test	P-value
CATA	49	49	1.00
OE + CATA	47	52	0.69

Time to Complete:

- Participants used significantly more time to answer the OE question versus the CATA question.

Table 3. Time spent on each question type by OE + CATA Version participants

Question	Shortest Time	Longest Time	Average Time	P-Value
OE	11 seconds	251 seconds	69 seconds	< 0.0001
CATA	12 seconds	81 seconds	35 seconds	

- Participants completing questionnaire Version 1 took more time to complete the CATA question versus Version 2 participants. However, the amount of time spent on the first question was significantly less for CATA versus OE.

Table 4. Time spent on CATA question by OE + CATA & CATA Version participants

Question	Shortest Time	Longest Time	Average Time	P-Value
OE	11 seconds	251 seconds	69 seconds	< 0.0001
CATA	10 seconds	118 seconds	42 seconds	

Frequency of Response Comparison

- Participants selected more responses with CATA than separate reasons written in the OE.
- Most frequent CATA responses were similar to most frequent OE responses.
- Participants tended to write more positive responses versus negative responses.

Table 4. Why participants liked CONTROL best (using each question type)

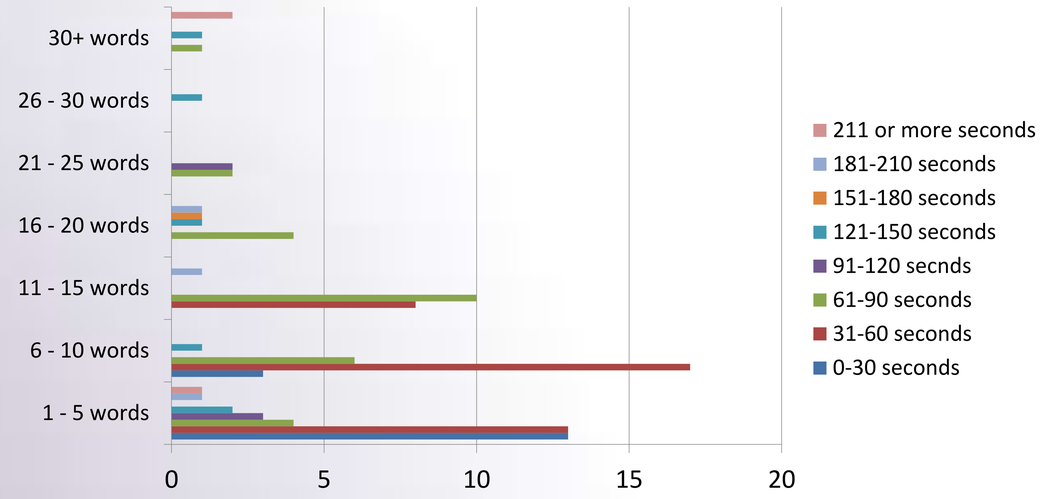
OE - Control	% comments
Sweeter taste	30%
More moist	30%
Better texture/fluffier/not as rubbery	23%
Better taste/better initial taste/more of a cake taste	21%
Softer/more tender	17%
Not as strong an aftertaste/afterbite	15%
More flavorful/better flavor/didn't taste like bread	9%
Not too sweet/ Less Sweet	9%
Denser	9%
Fresher taste	6%
More pleasant/like Mom used to make	6%
Spongier texture	6%
Not as dense	4%
	N=47

CATA - Control	% responses
Taste better	65%
Better flavor	59%
Fluffier/Lighter/More airy	47%
Sweeter	45%
Not as chewy/Gummy/Rubbery	33%
Better aftertaste	33%
No aftertaste	24%
Not as dry	22%
No off flavor	16%
Better appearance	16%
Not as many holes/more spongy	16%
Not as sweet	14%
More holes/less spongy	6%
Not as sour	4%
	N= 49

Frequency of Response Comparison

- The amount of words generated by participants was between 2 and 15 words, despite the amount of time spent answering the OE question.

Figure 1. Amount of words in OE response



Demographic Effects

- There were no significant differences in "Time to Complete" across age groups for either question type.
- Women spent significantly more time answering OE question versus men, yet time to complete CATA questions did not significantly differ between genders.

CONCLUSIONS AND COMMENTS:

- Answering a CATA questions was faster for participants than answering an OE question despite age or gender.
- Results were similar between CATA and OE questionnaires. However, frequency of response was higher for all CATA attributes versus frequency of responses generated from OE.
- The researcher must be familiar with the product and capture all potential responses for the CATA, as participants are not likely to use the "other" option.
- Researchers should make an effort to skew the CATA responses to be more positive toward the product, versus being a negative term.

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