SURVEYS: QUANTITATIVE & QUALITATIVE RESEARCH

SEER 2017

LEARNING OBJECTIVES

- Characterize the purpose of survey research and provide examples of the types of research questions that call for survey research.
- Name several different types of surveys and recognize important factors to consider when planning survey research.
- Be able to compose and evaluate potential survey question items.
- Evaluate survey research design & implementation plans using best practices.
- Create simple survey items with Google forms and some more complicated options with Qualtrics

THANK YOU

- Paula Lemons
- Jenn Thompson
- Evan Conaway, Qualtrics Jedi Master

RATIONALE OF SURVEYS

- Share:
  - What is the most recent survey that you have taken and what was its purpose?
- With a partner, consider this question:
  - Why would you choose to give a survey rather than another research method like qualitative interviews or observations?

SURVEYS

- "A survey is a type of quantitative research methods that uses questionnaires or interviews to collect data from a sample usually selected to represent a population." (Gall et al, 2007)

  - "The use of questions to measure the phenomenon of interest is another essential part of survey research. Especially important when trying to measure phenomena that cannot be directly observed, such as attitudes, feelings, and cognitions."(Martella et al., 2013)

QUESTIONS THAT CAN BE EXAMINED USING SURVEYS

Descriptive

- Distribution of characteristics, traits, and attributes (before you can answer questions about why the distribution exists).
- Example: End of course student evaluations of teaching

Explanation

- Explains the relationship between two different variables.
- Requires multivariate methods of analysis.
- Example: Academic persistence predicted by variables like gender, courses taken, participation.

Exploration

- Involves a phenomena not previously understood and usually involves initial in-depth interviews or questionnaires with a variety of items
- May provide leads for identifying important variables for further study.
- Example: Sources of racism on a college campus might start with a group of students of different backgrounds using in-depth interview or questionnaire

Martella et al, 2013

DESCRIPTIVE & EXPLANATION SURVEYS

- Brickman, Gormally, & Martella (2016). Making the Grade: Using Instructional Feedback and Evaluation to Inspire Evidence-Based Teaching *CBE-Life Sciences Education, December 1, 2016 15:ar75; doi:10.1187/cbe.15-12-0249*
- Abstract:

Our study goal was to characterize the landscape of current instructional-feedback practices in biology and uncover faculty perceptions about these practices. Findings from a national survey of 400 college biology faculty reveal an overwhelming dissatisfaction with student evaluations, regardless of self-reported teaching practices, institution type, or position. Faculty view peer evaluations as most valuable, but less than half of faculty at doctoral-granting institutions report participating in peer evaluation. When peer evaluations are performed, they are more supportive of evidence-based teaching than student evaluations.

DESCRIPTIVE & EXPLANATION SURVEYS

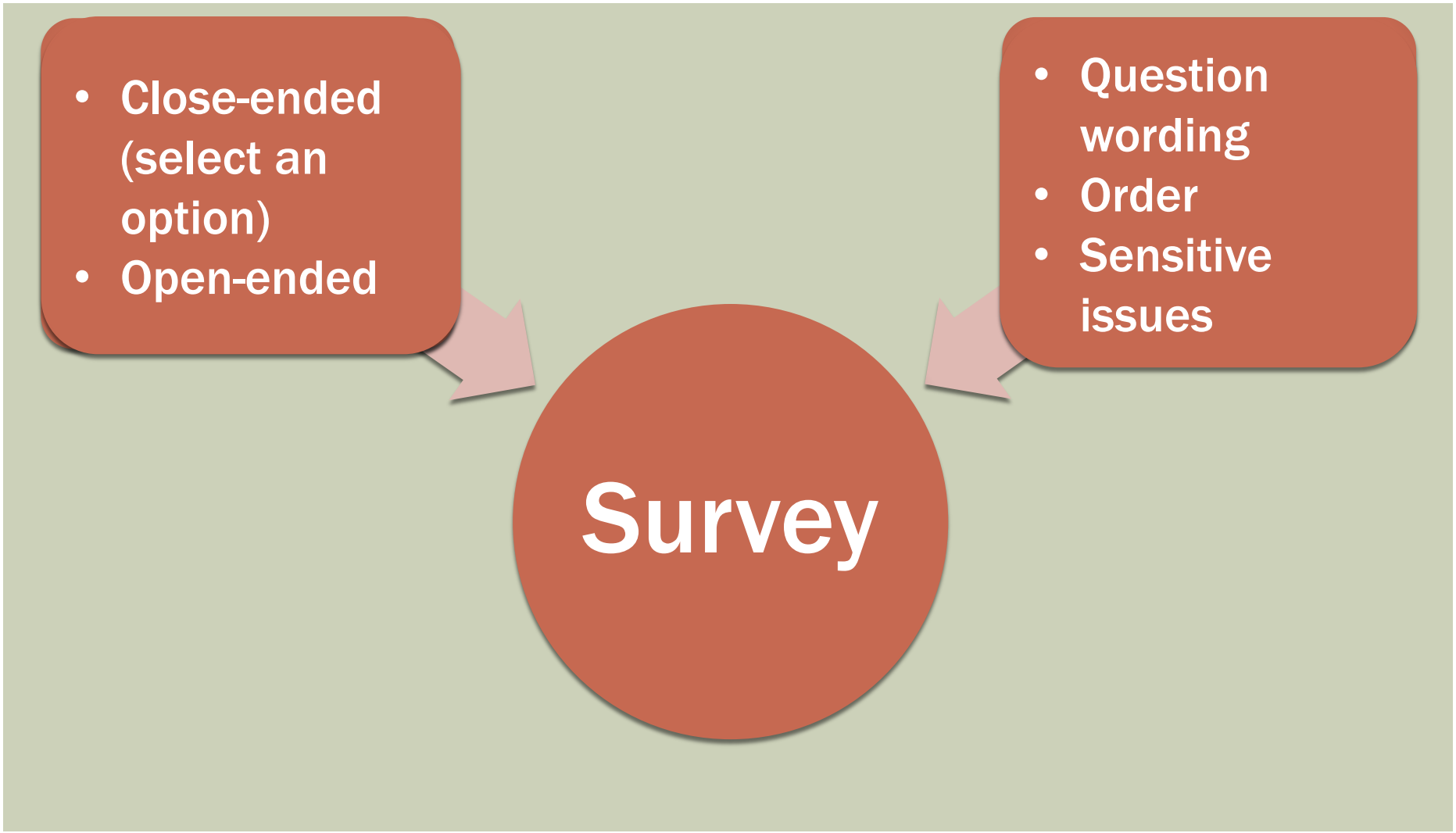
- Hartwig, M. K., & Dunlosky, J. (2012). Study strategies of college students: Are self-testing and scheduling related to achievement? *Psychonomic Bulletin & Review, 19*(1), 126-134.
- Abstract:

Previous studies, such as those by Kornell and Bjork (Psychonomic Bulletin & Review, 14:219-224, 2007) and Karpicke, Butler, and Roediger (Memory, 17:471-479, 2009), have surveyed college students' use of various study strategies, including self-testing and rereading. These studies have documented that some students do use self-testing (but largely for monitoring memory) and rereading, but the researchers did not assess whether individual differences in strategy use were related to student achievement. Thus, we surveyed 324 undergraduates about their study habits as well as their college grade point average (GPA).

STEPS IN SURVEY RESEARCH

- Step 1: Developing the survey – identifying key factors, writing items, testing and revising.
- Step 2: Administering survey
- Step 3: Analyzing the results

PLANNING SURVEY RESEARCH – STEP 1 DEVELOPING A SURVEY



STEP 1: DEVELOPING A SURVEY

Identifying Key Factors → Develop Questions or Statements → Format and Sequence of Questions → Pilot-test

What are the attributes, characteristics, or behaviors associated with the phenomena under study?

Reliable – if given multiple times, respondents would answer the same question in the same way.
Valid – the answers that respondents are an accurate representation of the underlying characteristic you are hoping to study

DEVELOPING YOUR OWN SURVEY

- Today, you are going to start developing a survey that relates to a research question that interests you.
- We will use the last 30 minutes to play with the powerful survey program (Qualtrics) that is available to UGA students, faculty and staff.

POSSIBLE RESEARCH TOPICS

1. What topic are you interested in surveying people about?

Share your name and a brief description of your topic

DEVELOPING YOUR OWN SURVEY

2. In the next 10 minutes, for the question you are interested in, start to identify key factors (really you would do a literature review for prior research) that can help you decide what types of questions you need to ask.
3. Once you have your factors, begin to write a few questions would help you find out more about your participants attributes, attitudes, characteristics, or behaviors that you want to find out more about from the survey.

THE DON'TS OF SURVEY QUESTION WRITING

- **Swap your questions with another pair and evaluate using the following things to avoid in question writing:**

- Question wording
  - Lengthy words
  - Questions too long
  - Questions not specific
  - Lack of frame of reference
  - Vague language
  - Double negatives
  - Asking two questions in one
  - Using jargon or acronyms
  - Leading questions
  - Cultural differences in meaning
  - Irrelevant items
- Respondent Characteristics
  - Memory-recall of events
  - Agreement or acquiescence bias (tendency to agree)
  - Social Desirability (need to appear in a positive light)
  - Floaters (forcing response for respondents who don't know)
  - Sensitive questions
- Presentation of Questions
  - Enough response categories
  - Question order
  - Filter questions: to determine if next set is relevant

STEP 1: PILOTING THE SURVEY

Identifying Key Factors → Develop Questions or Statements → Format and Sequence of Questions → Pilot-test

"The only good question is a pre-tested question."

This can include:

- Discussing with colleagues, methodologists, & practitioners from the same settings that you will be surveying.
- Cognitive interviews with people who reflect the respondents. Asked to "think aloud" as they answer the items.
- Basically, give the survey, revise the survey, repeat…

Indicate modifications made as a result of pilot as well as who participated as pilot testers

4. What is your plan to pilot test your survey?

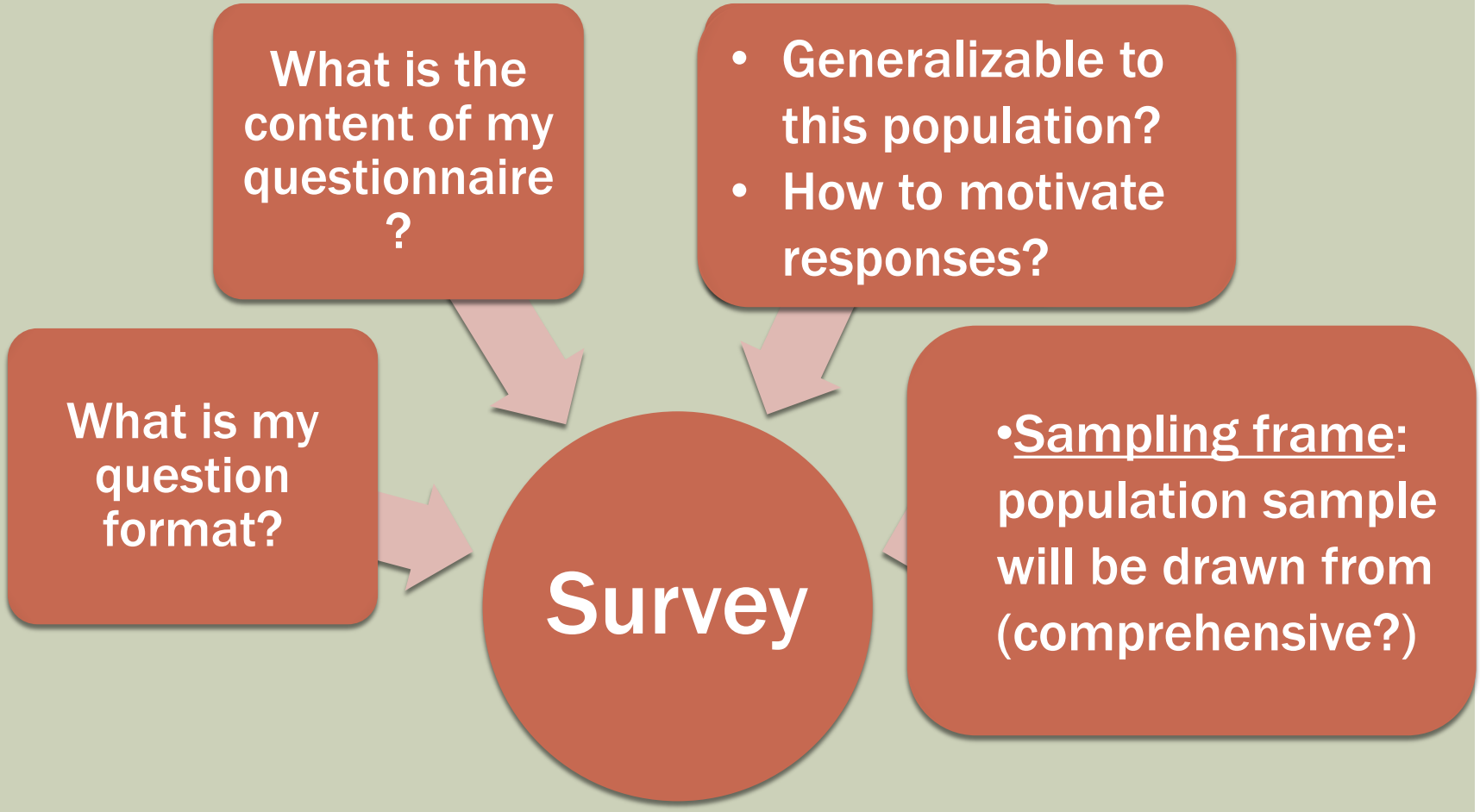
FEEDBACK SURVEY

- We developed survey questions designed to collect faculty perceptions about current instructional-feedback practices and elicit faculty wishes for ideal feedback practices. We also collected faculty demographic data so we could compare responses to these items between faculty at different institutions, of different ranks, and with different experiences.
- We then conducted individual cognitive interviews using a think-aloud protocol (Ericsonn and Simon, 1980; Collins, 2003) with initial survey questions. Twelve faculty members were asked to respond to each survey question and, as they answered the question, to describe why they responded in particular ways, to explain whether item responses were missing or irrelevant, and to comment on question and item-response clarity. We selected a range of faculty to represent different tenure status and institution type. After each interview, two coauthors (P.B. and A.M.M.) discussed and revised relevant survey items to address ambiguous wording and add or revise items.

STEPS IN SURVEY RESEARCH

- Step 1: Developing the survey
- Step 2: Administering survey – sampling and collecting data
- Step 3: Analyzing the results

PLANNING SURVEY RESEARCH – STEP 2



SAMPLING FRAMES

- **Exhaustive sampling frames**: taken from a more or less complete list of individuals in the population to be studied (usually when population is small or clearly defined (e.g. all members of the graduating class.)
- **Convenience sampling frames**: set of individuals who do something or go somewhere that enables researchers to administer the survey. Create list and sample simultaneously, for example, surveying the 10th person to enter stadium on a football game day.
- **Cluster sampling frames**: completed in two or more stages: First randomly select houses in a neighborhood that have school-aged children, then survey a random sample of adults living in these houses about the perception of the quality of education.

SAMPLING & DATA COLLECTION – FEEDBACK SURVEY

A mixture of faculty within Biology departments were identified for this study (convenience sampling):

1) Randomly selecting a subset of institutions from each category in the Carnegie Classification of Institutions of Higher Education Examining
2) Using website research, we obtained email addresses from up to six faculty from the biology departments of these institutions, attempting to get an even distribution of faculty from different ranks (two full professors, two associate professors, and two assistant professors or lecturers)

Methods: We obtained email addresses for faculty at 70 doctoral institutions (24% of all 297 doctoral institutions), 175 master's institutions (24% of 724 master's institutions), 161 baccalaureate institutions (24% of 663 appropriate baccalaureate institutions), and 344 associate's institutions (33% of 1042 associate's institutions). We sent the URL for our Web-based survey of feedback practices to more than 4000 faculty in October 2014 (Qualtrics, 2016). We received a total of 399 individual responses, of which 343 were complete for all questions. The respondent pool represents at least 185 different institutions (102 of the respondents did not include the names of their institutions).

DEVELOPING YOUR OWN SURVEY

5. Decide on what your target population is for your survey and describe <u>which</u> sampling frame you would use and **<u>why</u>**.
   - **<u>Exhaustive sampling frames</u>**: taken from a more or less complete list of individuals in the population to be studied (usually when population is small or clearly defined.(all members of the graduating class.)
   - **<u>Convenience sampling frames</u>**: set of individuals who do something or go somewhere that enables researchers to administer the survey. Create list and sample simultaneously, for example, surveying the 10th person to enter stadium on a football game day.
   - **<u>Cluster sampling frames</u>**: completed in two or more stages: First randomly select houses in a neighborhood that have school-aged children, then survey a random sample of adults living in these houses about the perception of the quality of education

CHECKLIST FOR SURVEY STEPS 1 & 2

Threats to Survey Validity	YES	NO
Were the survey questions adequate in obtaining the information needed by the researchers?		
Was the survey pilot tested?		
Did the authors indicate that modifications were made based on the pilot results?		
Did the pilot participants represent the respondents?		
Were their alternative explanations for the results?		

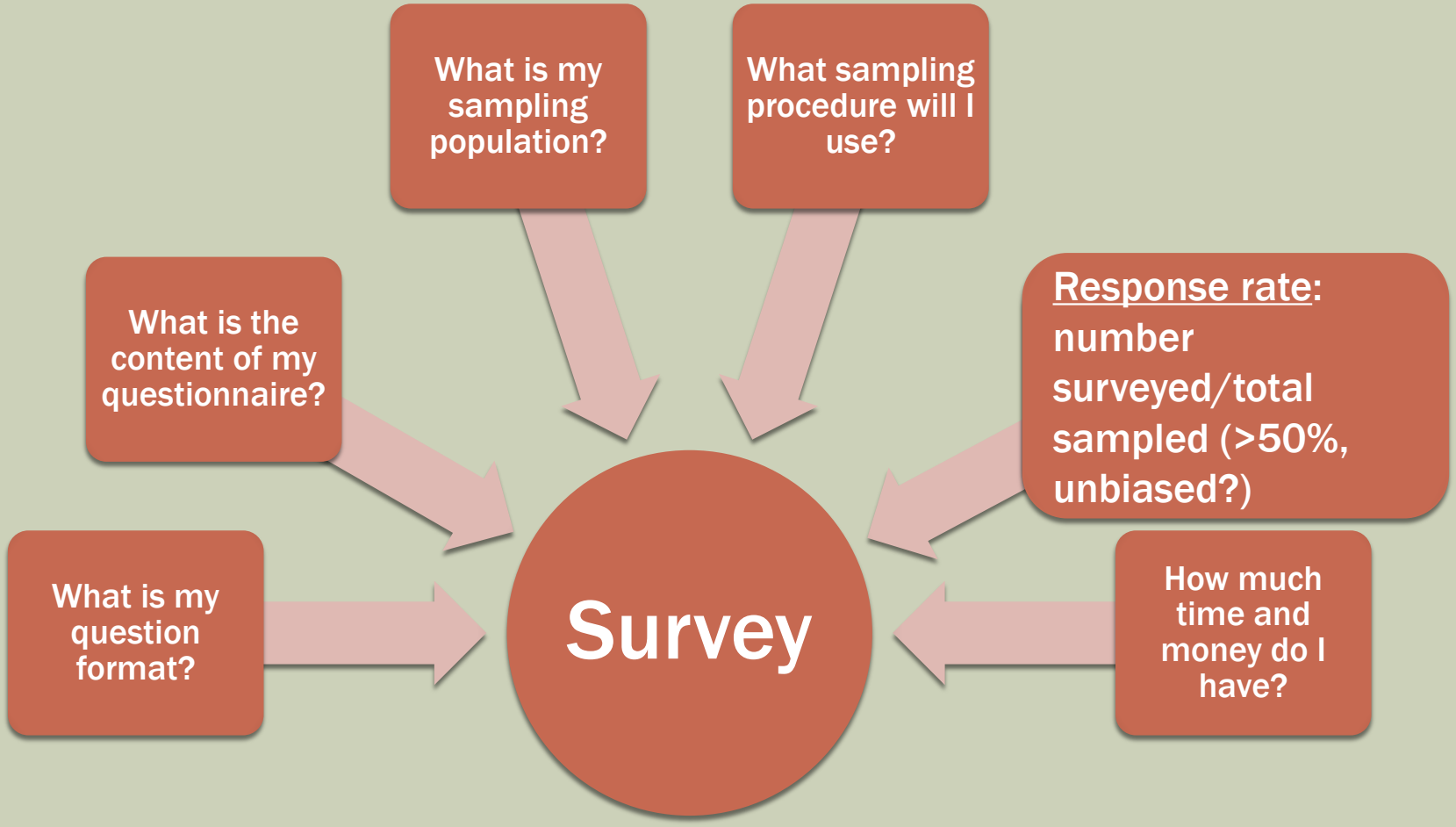
What sampling frame was used?	Exhaustive	Convenience	Cluster

External Validity	YES	NO
Was the probability of being selected included in the description of the sampling procedure?		
Were the respondents and response rate described?		
Was the sample representative of the target population?		

STEPS IN SURVEY RESEARCH

- Step 1: Developing the survey
- Step 2: Administering survey
- Step 3: Analyzing the results – presenting the data

PLANNING SURVEY RESEARCH – STEP 3



PRESENTING CATEGORICAL DATA

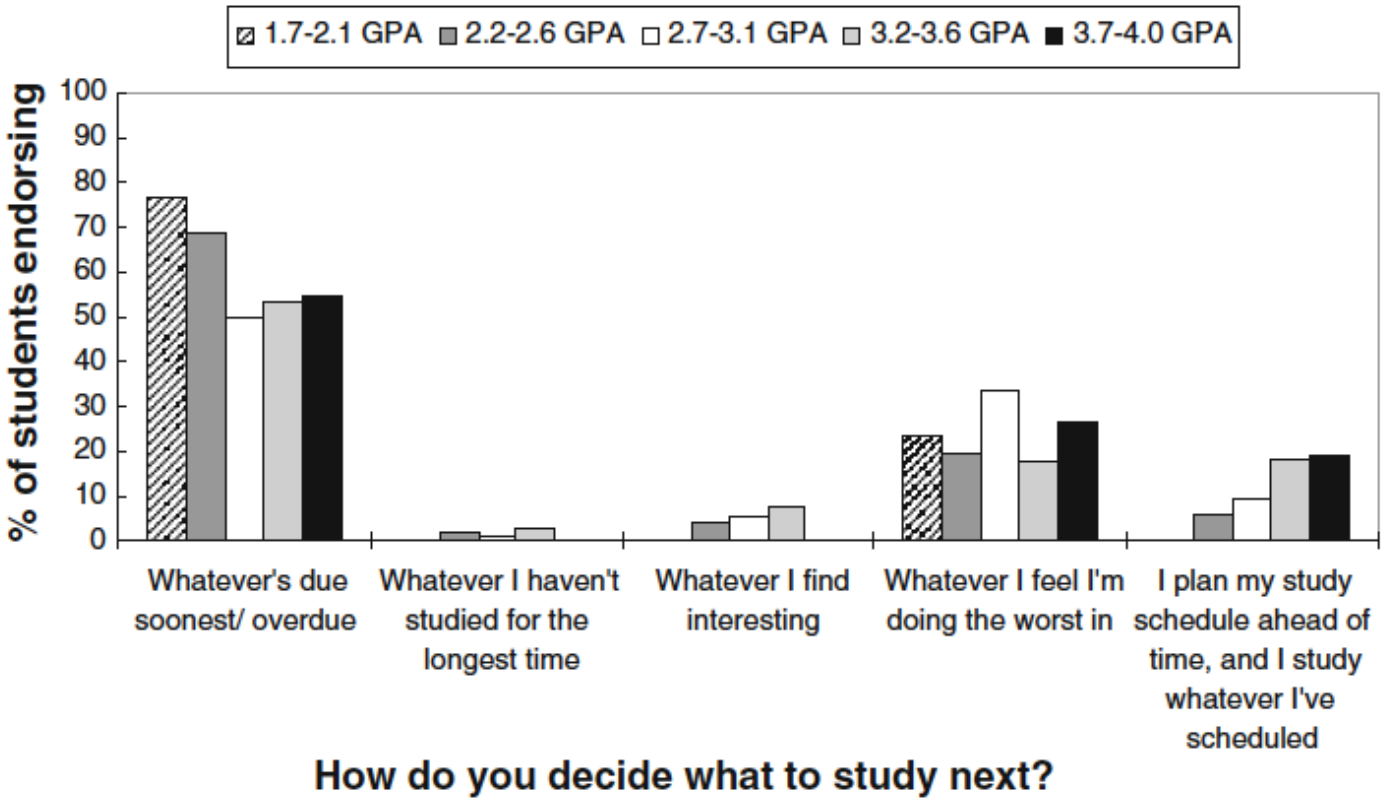
Table 1 Study habit survey and response percentages

	Questions	Choices	Kornell and Bjork (2007)	Present Study
1	Would you say that you study the way you do because a teacher (or teachers) taught you to study that way?	Yes	20%	36%
		No	80%	64%
2	How do you decide what to study next?	Whatever's due soonest/overdue	59%	56%
		Whatever I haven't studied for the longest time	4%	2%
		Whatever I find interesting	4%	5%
		Whatever I feel I'm doing the worst in	22%	24%
		I plan my study schedule ahead of time, and I study whatever I've scheduled	11%	13%
3	Do you usually return to course material to review it after a course has ended?	Yes	14%	23%
		No	86%	78%
4	All other things being equal, what do you study more for?	Essay/short answer exams	29%	20%
		Multiple-choice exams	22%	22%
		About the same	49%	58%

- Hartwig, M. K., & Dunlosky, J. (2012). Study strategies of college students: Are self-testing and scheduling related to achievement? *Psychonomic Bulletin & Review, 19*(1), 126-134.

PRESENTING CATEGORICAL DATA

Fig. 3 Percentages of students selecting each response option for how they decide what to study next (Question 2, Table 1), as a function of GPA. Respondents could select only one answer that best represented their habits



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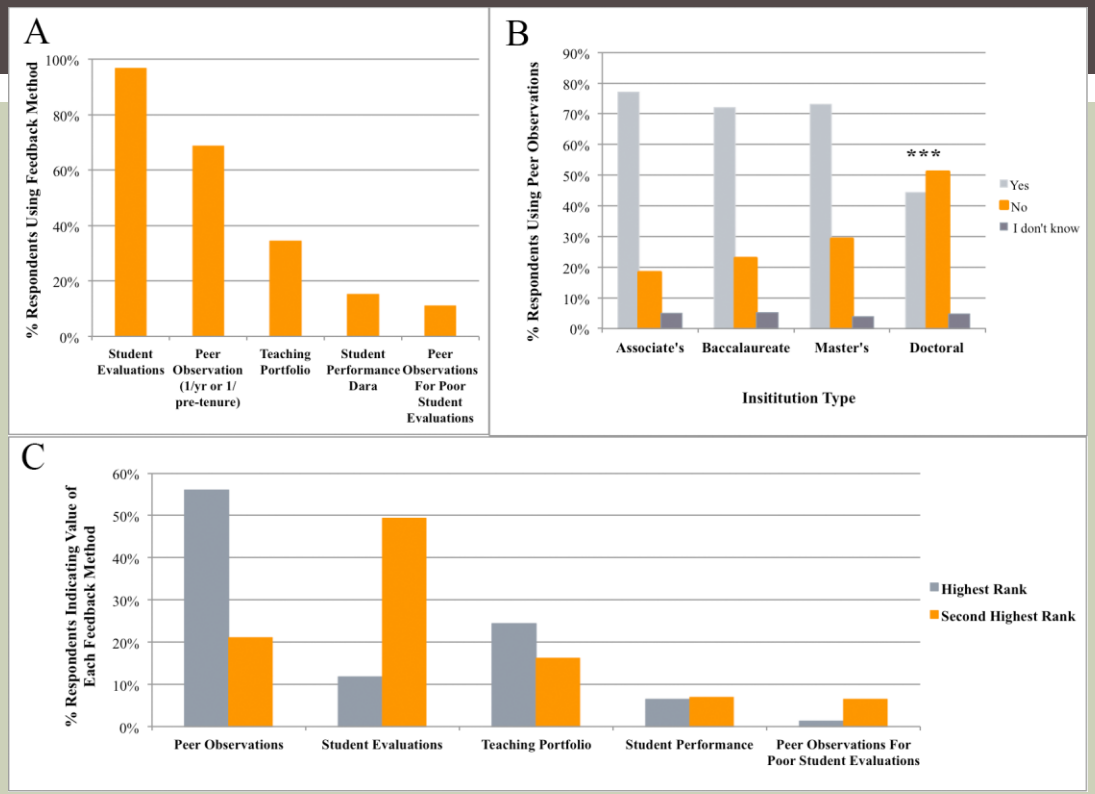
STEPS IN SURVEY RESEARCH

- Step 1: Developing the survey
- Step 2: Administering survey
- Step 3: Analyzing the results – statistical analysis (survey was designed to measure a representative sample of the total population so that conclusions can be drawn about that population as a whole from the sample.)

ANALYZING CATEGORICAL DATA



$\chi 2 = 18.9$, df = 2, $P < 0.001$)

Chi-squared test: Examines if there is a relationship between two categorical variables. Compares frequencies you observe in various categories to the frequencies you might expect to get in these categories by chance. Larger samples are needed for best approximation of distribution, if you have small samples, Fisher's Exact test or Likelihood ratio are preferred.

QUALTRICS

- Let me show you the results you can get.
  - Reports
  - Data and Analysis (Cross Tabs)
- Steps in your survey creation
  - Create Project
  - Create a New Question (Mouse over to see examples)
    - Descriptive Text (Header) with Graphic
    - Multiple Choice, Matrix Table, Text Entry (free response), Slider, Rank Order, Side by Side
    - Specialty Questions: Constant Sum, Pick/Group/Rank, Hot Spot, Heat Map, Graphic Slider, Drill Down, Highlight
  - Left side move up and down, right side insert or delete and edit question type, etc.

REFERENCES FOR FURTHER STUDY

-
- Joseph Check and Russell K Schutt, 2012. “Research Methods in Education.”
- M. D. Gall, Joyce P Gall, and Walter R. Borg, 2007 “Educational Research: An Introduction.”
- Ronald C. Martella, J. Ronald Nelson, Robert L Morgan, and Nancy E. Marchand-Martella (2013) Understanding and Interpreting Educational Research. Guilford Press.
- UGA Biology Education Research Group