The Silent Majority: An Examination Of Nonresponse In College Student Surveys

THE SILENT MAJORITY: AN EXAMINATION OF NONRESPONSE IN COLLEGE STUDENT SURVEYS

A Dissertation Presented

by

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ABSTRACT

THE SILENT MAJORITY: AN EXAMINATION OF NONRESPONSE IN COLLEGE STUDENT SURVEYS

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Nonresponse is a growing problem in surveys of college students and the general population. At present, we have a limited understanding of survey nonresponse in college student populations and therefore the extent to which survey results may be biased. The purpose of this dissertation is to explore three facets of nonresponse in surveys of college students in order to strengthen our empirical and conceptual understanding of this phenomenon. This dissertation seeks to contribute to our understanding of who participates in surveys and who does not, how students experience the process of being asked to complete surveys, and whether or not students' perspectives about surveys suggest that college student surveys should be conceptualized as organizational surveys. To begin to answer these questions, I conducted three studies – a secondary data analysis that examines student characteristics associated with the odds of completing a survey, a "survey on surveys" study that asks students about their experiences with surveys, and a series of focus groups to understand how students made

sense of surveys at their institutions. Taken together, these findings provide a basis for a more developed and nuanced understanding of nonresponse in student surveys.

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INTRODUCTION

Introduction: Survey Research and the Study of College Students

Higher education research attempts to answer numerous questions about the college student experience. What causes some students to persist, and others to drop out? Does attending an institution with a racially diverse student body contribute to students' success in an increasingly heterogeneous world? How widespread a problem is Internet addiction among students? As befitting an applied field with a wide breadth of research questions, higher education researchers rely on the theoretical underpinnings and methodologies of several social science disciplines (Smart, 2005), in particular sociology, psychology and economics, as well as the methods of other applied fields of study (e.g. public health and management). Moreover, the field of higher education does not align itself solely within a particular tradition of inquiry or epistemology. For example, studies conducted from constructivist (e.g. Jones & Hill, 2003), feminist (e.g. Twombly, 1993), and post-positivist perspectives (e.g. Pike 2008) are all published in higher education journals. Higher education researchers rely on a range of data collection methods to answer their research questions, including interviews, observations, administrative data, tests, content analyses, and experiments (Hutchinson & Lovell, 2004). Although the research orientations and data sources of higher education studies are quite diverse, the single most common method of collecting data on college students is through surveys (Hutchinson & Lovell, 2004, Porter, 2011).

Surveys are an important tool for understanding society as a whole (Rossi, Wright, & Anderson, 1983). Writing at the dawn of modern survey methods, Gallup and Rae (1940) argued, "The central problem of making democracy work has been related to

the need to discover the real purposes and opinions of the people" (p. 28). Rossi and his colleagues asserted that modern states require information about their populace in order to function (Rossi, et al., 1983). The decennial census, the National Crime Victimization Survey, and the Common Population Survey are examples of surveys upon which the United States government currently relies to understand the social landscape and to inform policy decisions (Groves et al., 2009).

In the higher education context, studies employing survey research comprise a large percentage of the literature on college students (Hutchinson & Lovell, 2004; Pike, 2007; 2008; Porter & Umbach, 2006). The prevalence of survey research in the higher education literature has been documented in several research studies. Fuqua, Hartman, and Brown (1982) found that 56% of empirical articles in the 1972-1978 volumes of *Research in Higher Education*, 74% of empirical articles in volumes 1972-1978 of the *Journal of Higher Education*, and 84% of empirical articles in volumes 1967-1978 of *The School Counselor* employed survey data. Hutchinson and Lovell (2004) analyzed quantitative research articles from the 1996-2000 volumes of the *Journal of Higher Education*, *Research in Higher Education*, and the *Review of Higher Education* and found that over two-fifths (41.5%) of articles employed primary survey data, and over one-third (35.1%) employed secondary survey data. More recently, an analysis of articles in Volume 46 of the *Journal of College Student Development* found that of the 25 quantitative articles, 22 employed surveys or de facto surveys (Kolek, 2006).

Surveys are used to understand how college students behave, what they think, what they perceive, and who they are. Institutional researchers regularly use survey data to inform institutional policy (Porter, 2004; Porter & Whitcomb, 2003a), evaluators and

assessment specialists employ surveys to determine whether or not programs achieve their objectives (Palomba & Banta, 1999), and faculty members advance a larger understanding of higher education phenomena by virtue of this data collection method (Hutchinson & Lovell, 2004). Survey data appear in internal memoranda, technical reports, academic journals, popular press publications, and institutions' accreditation documents. At times, these data are used to make high stakes decisions – new policies may be adopted, college rankings may be changed, programs may be cut, and grants may be renewed based on survey results. Our understanding of important phenomena such as student attrition, mental health, alcohol use, the financial burden of college, student learning, and gender discrimination hinge, at least in part, on the ability of researchers to collect valid and reliable survey data.

Survey Methodology

Survey research is widely used to study college students because it has a number of strengths as a research method. Surveys are an efficient way to collect data, they yield data that are relatively easy to analyze, they allow for anonymous data collection, and are economical (Krathwohl, 1998). Most importantly, when properly designed and well-executed, sample surveys produce results that are generalizable to the population in question (Groves et al., 2009).

Probability sampling allows researchers to infer population values on measures of interest while collecting data from only a subsection of the population, and is the basis for scientific survey research (Singer, 2006). One of the assumptions underlying probability sampling is that observations are obtained for 100% of one's sample (Singer, 2006). Since it is extremely rare for all potential respondents to complete a survey, most surveys

are subject to potential nonresponse error, which can occur because surveys capture the responses of only a segment of the initial sample (Groves et al., 2009).

Of the hundreds of thousands of college students who receive survey invitations each semester, only a subset of students complete each survey. Other students who are sent requests may never receive the survey invitation, may fail to read the invitation, may forget to complete the survey, or may purposely refrain from participating. In a given survey, results will be biased to the extent that the responses of students who did complete the survey differ from what the distribution of responses would have been if all sampled students had completed the survey (Pike, 2008). Additionally, survey results will be biased to the extent that inter-relationships between variables of interest differ between respondents and nonrespondents (Groves & Peytcheva, 2008).

Response Rates in Decline

Researchers have relied on high survey response rates as one important indicator of data quality, presuming that surveys with high response rates produce less biased estimates than surveys with low response rates (Groves, 2006; Porter & Whitcomb, 2003a). Unfortunately, in the past ten years, drastic decreases in response rates of surveys of college students have occurred (Porter & Whitcomb, 2005a). Surveys of college students are not the only surveys to suffer from increasing levels of nonresponse, as response rates have declined in general population surveys in the United States and worldwide (Groves et al., 2009; Singer, 2006). When Goyder (1987) penned *The Silent Minority*, his seminal work on nonresponse, the majority of potential respondents in a sample responded to a well-conducted survey. Today, in contrast, nonrespondents comprise a “silent majority” in many surveys of the general population (Manfreda,

Bosnjak, Berzelak, Haas, & Vehovar, 2008) and most prominent surveys of college students (Dey, 1997; Porter & Whitcomb, 2003a). For example, the 2010 Web administration of the National Survey of Student Engagement (2010), often referred to as "NSSE," achieved an overall response rate of 38%. Furthermore, surveys of undergraduates conducted by the Student Assessment, Research and Evaluation Office at the University of Massachusetts Amherst between 2006 and 2008 had an average response rate of 42% (Williams, Laguilles, Kolek, & Fleenor, 2008).

Low response rates reduce a study's statistical power because of the smaller number of observations, and lessen its face validity (Rogelberg, 2006). Most importantly, the low response rates of many surveys today raise the issue of potential nonresponse bias, threatening the validity of our survey results, and therefore our understanding of important phenomena related to the college student experience (Groves, 1989; Groves et al., 2009; Malaney, 2002a; Pascarella, 2001; Porter, 2004; Rogelberg, 2006).

Purpose of the Study

The purpose of this dissertation is to investigate nonresponse in surveys of college students. This dissertation research is concerned with surveys that are used to understand college students' experiences, attitudes, opinions and behaviors to order to inform policy and practice, assess or evaluate programs, or inform the larger understanding of higher education. Historically, the higher education research literature has paid scant attention to survey response rates or to research methodology in general, (Fuqua et al., 1982; Hutchison & Lovell, 2004; Malaney, 2002b) despite substantial reliance on survey data (Hutchinson & Lovell, 2004; Pike, 2007; Porter & Umbach, 2006). It is particularly

perplexing that researchers in the field have paid little attention to nonresponse and nonresponse bias in surveys of college students, given the current "culture of assessment" in which higher education decision-making has become increasingly data driven and accountability concerns are salient to a number of higher education stake-holders (McGinnis, 2006; Pascarella, 2001). In contrast, public opinion researchers have devoted extensive effort to understanding nonresponse bias in the current survey environment, with the hopes of developing a better understanding of how to yield survey data that produce valid estimates (Singer, 2006). The lack of research on college student nonresponse is also curious because, compared to the general population, college students are particularly suited to nonresponse studies in two ways (Jans & Roman, 2007). First, in many surveys of college students there are possibilities of complete coverage of the population (all students are listed in an institution's data base and communicating with students by sending email messages to institutionally provided email addresses has become commonplace). In contrast, there is no way to ensure complete coverage of residents of the United States, as a comparable national registry of all residents with current contact information does not exist. Second, institutional databases at colleges and universities contain important information that can be linked to the entire sample (both those who do respond and those who do not respond), for example gender, race/ethnicity, age, major, grade point average, standardized test scores, and financial aid status. Most surveys of the general population cannot be so easily linked to this wealth of data that has the potential to provide a rich understanding of individual level characteristics related to nonresponse.

Four decades ago, Astin (1970) warned that nonresponse error posed the greatest methodological threat to mail surveys of college students. Despite this caution, higher education researchers as a whole have not made adequate efforts to understand nonresponse. Given the low response rates often obtained today, if higher education practitioners and scholars are to continue to rely on surveys of college students to inform policy, practice and the larger understanding of educational phenomena, it is essential that a better understanding of nonresponse in college student surveys be developed. At present, we have little certainty that surveys of college students produce valid estimates, and we do not know nearly enough about the conditions under which nonresponse bias is correlated with the population values on the variables of interest in any particular survey (Porter & Whitcomb, 2005a). For example, if students' likelihood of responding to a survey about study habits were positively correlated with the amount of time that students spent studying, the survey results would overestimate the amount of time students spend studying. Higher education researchers have been conducting surveys of students for decades, and from the absence of published concern about response rates, one may conclude that many researchers either merely hope that nonresponse bias is not too problematic or simply ignore the potential problem of nonresponse bias altogether (Hutchinson & Lovell, 2004). Higher education researchers can and should do better.

In the general survey research literature, scholars have developed several theories of response (see Brehm, 1993; Dillman, 2007; Goyder, Boyer, & Martinelli, 2006; Groves, Singer, & Corning, 2000; Groves et al., 2009) and have conducted hundreds of studies examining nonresponse and nonresponse bias (Dillman, 2007; Goyder, 1987; Groves et al., 2009; Singer, 2006). However, the applicability of these findings and

theories to surveys of college students is not clear. There is a great deal we do not understand about whether or not students are successfully contacted with survey requests, how students perceive survey requests, why students do or do not participate in surveys, which students respond, and how nonresponse relates to nonresponse bias in a particular survey or in surveys generally.

Researchers who study college students have not articulated a theoretical model for survey response particular to college students and the unique context in which they are often asked to complete surveys. When higher education researchers have applied survey response theories in efforts to understand nonresponse or potential nonresponse bias, survey response has been viewed through lenses applicable to general population surveys (e.g. Dey, 1997; Pike, 2007; Porter & Umbach, 2006; Porter & Whitcomb, 2005a). However, researchers have not explored the potential limitations of such models for college student surveys. For example, these models do not take into account the relationship between the student respondent and his or her college or university. Work by organizational researchers on survey nonresponse, a previously unutilized body of literature in the study of college students' survey behaviors, may provide important insights for understanding nonresponse in college student surveys. Surveys of college students might be appropriately conceptualized as organizational surveys – different from most public opinion surveys in that a strong relationship exists between the respondent and the entity sponsoring the survey outside of a single request for survey participation (Rogelberg & Stanton, 2007). The multi-dimensional relationship may differentiate surveys of college students from most general population studies, since colleges and universities often have comparably more complex involvement in the survey process (e.g.

sponsoring the survey, collecting data, being custodian of the final data set, analyzing and presenting data, and making changes to policy and practice on the basis of data, while also being responsible for many of the experiences about which students are asked to report in the survey itself).

Research Questions

This dissertation will shed light on several important areas in order to address the larger issue of understanding the extent to which nonresponse bias negatively impacts survey results of college student populations. This study is guided by the following three research questions: (a) "Who responds, and who does not respond to college student surveys?" (b) "How do college students experience surveys from their institution?" and (c) "Should we treat surveys of college students as organizational surveys?" Given the breadth of work needed to comprehensively improve our understanding of student nonresponse, this dissertation will not be able to answer all of our pressing questions.

In addressing the question, "Who responds to college student surveys?" I will examine the individual level factors that may influence survey response (e.g. demographics, academic performance, engagement, attitude towards surveys, and attitudes toward one's institution). In order to understand students' experience with surveys, I will seek to understand the mechanics of the survey request (e.g. how many survey requests students receive, how many surveys students complete) and why students do or do not participate. In exploring whether or not college student surveys should be considered organizational surveys, it is important to understand how students interpret survey requests, and if they make decisions about whether or not to respond to a survey

while considering aspects of their organizational membership or previous organizational behavior.

The empirical work of this dissertation consists of three studies at two institutions – a large public research university, and a small, elite, private liberal arts college, both located in the northeastern United States. The first study is a partial replication of Porter and Whitcomb's (2005a) analysis of nonresponse in student surveys. This study seeks to answer the question, "Who responds and who does not respond to college student surveys?" Porter and Whitcomb found that women, students who are more socially engaged, and students with particular personality types are more likely to complete survey requests. Replicating this study will help researchers understand whether or not Porter and Whitcomb's findings might be idiosyncratic to the single institution in their study, or if the findings might be similar at other institutions. Following Porter and Whitcomb's design, records from the liberal arts college's database were linked with data from the CIRP Freshman survey. These data are used as independent variables to understand student characteristics related to response or nonresponse to a later survey. These characteristics include demographic characteristics and academic performance, proxies for high school engagement, and Holland personality types. I discuss the design, methods, and results of this replication study in Chapter 3.

The second study in this dissertation uses a "survey on surveys" approach to understanding students' experiences with surveys. I constructed a set of survey items which were appended to two surveys conducted at a university. The items asked respondents about the number of surveys they had been asked to complete, the number they actually completed, and their motivations for participating in surveys, for example

liking to complete surveys, the topic, or the survey incentive. Analyses of these items was designed to generate descriptive and comparative information regarding students' experiences with and attitudes toward surveys from their institution, for example, if men and women had different motivations for completing surveys or whether students who report completing a smaller percentage of surveys report different motivations for completing surveys than other students. Chapter 4 will describe the research design, methods, and results of the survey on surveys study.

The third study in this dissertation consists of four focus groups of students – two at the liberal arts college (from which the replication study data originated), and two at the university at which I conducted the survey on surveys study. These focus groups were designed to tap into students' experiences the surveys, their understanding of how their experiences at their institution relate to their survey-taking behaviors, and how they believe their institution uses survey data. Analysis of focus group data is designed to answer the third research question, whether college student surveys should be considered organizational surveys. I discuss the research questions, research design, methods, and results of the focus group study in Chapter 5.

Significance of the Study

Porter (2004) has argued that, "more than ever higher education professionals need quality survey data for internal and external assessment and planning" (p.5). Unfortunately, given the current state of high levels of nonresponse in many surveys of college students, we have little reason to suspect that survey estimates that might be used for assessment, planning, and scholarship are valid. Rather than assuming survey data are of sufficient quality for benchmarking, to inform decision-making, or advance

understandings of educational phenomena, the onus is on researchers to show why surveys with low response rates should be trusted. Developing a better understanding of the response process of college students is a step toward tackling this problem, which may lead to better strategies to improve response rates, ways to more appropriately weight survey data, or develop criteria for judging if a particular survey with a low response rate is likely to produce valid estimates. Although I hope that the results of this dissertation will serve to strengthen survey research studies of college students, it is also possible that results may suggest that we will not be able to obtain valid survey data under particular conditions or for particular populations of students.

This dissertation has the potential to impact survey research conducted to inform policy and practice as well as work designed to further our understanding of higher education phenomena. This dissertation's results could affect higher education faculty members, journal editors, institutional researchers, assessment specialists, college and university administrators, and other higher education stakeholders. Given the importance placed on data-driven accountability in the current climate, the results of this research may cast some doubt on the validity of a number of research studies (e.g. NSSE, CIRP, and the American College Health Assessment (ACHA)) that are used as measures of institutional success as well as higher education scholarship. Currently, the higher education enterprise devotes significant resources to survey college students and makes high stakes decisions based on these results (Porter, 2004). Unfortunately, colleges and universities may be engaging in a fruitless exercise since nonresponse bias could be rendering survey results invalid, even though they are being used for high stakes decision-making and to build our understanding of higher education phenomenon.

Definitions

The following section provides definitions for key terms I will be using throughout this dissertation. The section is divided into terms for: (a) types of surveys, (b) people who may be asked to participate in a survey and response rates, (c) probability sampling, and (d) error.

Surveys

A random sample survey is what many people think of when they hear the term, "survey." This is a data collection tool that employs a questionnaire to elicit responses from people. A random sample survey is designed to estimate population parameters by using probability sampling to select a group of participants. For example, researches may be interested in estimating the percentage of students at a university who work for pay. Commonly used survey modes include face-to-face interviews, mail surveys, telephone surveys, and Web surveys. Participants respond to questions either by selecting from a limited number of response options (e.g. very satisfied, somewhat satisfied, etc…) or through their own words. A random sample survey employs probability sampling in order to infer the values of a population while surveying only a subset of the population. For example, the Behavioral Risk Factor Surveillance System survey provides estimates of obesity in the adult population of the United States by state (Groves et al., 2009). A census differs from a random sample survey because in a census every member of the population is invited to participate. Both random sample surveys and censuses are tools that can theoretically generate reliable estimates of population parameters. In contrast, surveys that employ convenience samples are not scientific surveys, because members of the sampling frame do not have a known, non-zero chance of selection (Patten, 2001).

In this proposal, the term "survey" is used to encompass random sample surveys and censuses.

An organizational survey or institutional survey is conducted by or on behalf of an organization of which a potential respondent is a member (Rogelberg & Stanton, 2007). Researchers and higher education scholars do not typically characterize surveys of college students as organizational surveys, but in Chapter 2, I will argue why it might be appropriate to conceive of many college student surveys in this way. Surveys of college students that could be considered organizational surveys include local surveys (e.g. satisfaction with the campus dining commons) as well as consortial and national survey projects that purport to be used at the institutional level (e.g. inform campus policy). In contrast, a survey about political beliefs sent to a sample of college students as part of a political science professor's research may have little or no bearing on a student's organizational relationship and would not be considered an organizational survey. In reality, not all organizational surveys are random sample surveys or censuses, but all references to organizational surveys in this proposal will be either random sample surveys or censuses.

People: Populations, Samples, Respondents, and Response Rates

Regardless of whether a survey researcher's target population is people (e.g. likely voters) or organizations (e.g. businesses in Massachusetts) human beings complete surveys. In survey research, all eligible entities for a survey are referred to as the population. For example, if a researcher were investigating teenage alcohol consumption in the United States, the population might be all U.S. residents between the ages of 13 and 19. Ideally, a random sample would be drawn from the entire population. In practice,

this is often difficult to achieve. For example, individuals who do not own a telephone cannot be part of a telephone survey. The subset of the population who may be selected to participate in a survey is referred to as the sampling frame (Dillman, 2007). Survey researchers often survey only a portion of the people in their sampling frame. This subset of entities who are invited to participate in a particular survey is the sample (Groves et al., 2009). Of course, not everyone who is invited to participate in a survey completes the survey. Those who do are called respondents. Those who do not complete a survey are nonrespondents or nonresponders. Nonrespondents include those who receive the survey invitation but opt not to participate (refusers or refusals), those who never receive the survey request, and those who may not be able to respond, (e.g. to a language barrier) or who might be otherwise ineligible (e.g. someone who is a resident alien in a survey of U.S. citizens). Survey response theories acknowledge that potential respondents differ in their likelihood of completing a particular survey (Dillman, Smith, & Christian, 2009; Groves, Singer, & Corning, 2000). Survey researchers use the term "response propensity" to describe the likelihood that a particular respondent will complete a given survey.

One important calculation for survey research is a survey's response rate. At the most basic level, the response rate is calculated by dividing the number of respondents by the number of units in the sample. The response rate is expressed as a percentage. For example, if a survey were sent to one thousand students and six hundred students replied, the response rate would be 60%. It is important to note that there are a number of different ways to compute response rates. For example many calculations of response rates exclude sampled individuals who are found to be ineligible from the denominator,

and calculations differ with respect to how partially completed surveys are treated (see American Association for Public Opinion Research, 2004).

Probability Sampling

Survey research is founded on the principles of probability sampling, often referred to as "sampling." Probability sampling allows researchers to make inferences about the population from which the sample is drawn (Bradburn & Sudman, 1988; Fowler, 2009; Groves, et al., 2009; Krathwohl, 1998; Rea & Parker, 1997). In probability sampling, all units of the sampling frame have a known, non-zero chance of being selected, the most basic form of which is simple random sampling in which all units have equal probability of selection (Sudman, 1976). One of the assumptions of probability sampling is that there is an observation for all sampled units (Singer, 2006). In practice, almost no surveys achieve a response rate of 100%.

Survey Error

Survey methodologists have identified four main sources of error in surveys--coverage error, measurement error, sampling error, and nonresponse error (Groves, 1989). Other types of survey error include interviewer error (e.g. if a telephone interviewer incorrectly records a respondent's answer), and data processing errors (e.g. if responses were incorrectly transposed in a data file) (Willis, 2005).

Sampling Error

Sampling error is present in all surveys with the exception of surveys that are conducted of all members of the population (i.e. censuses). Sampling error is the product of surveying a subset of the population rather than the population in its entirety (Dillman, 2007). Because potential respondents have a known probability of being selected, it is

possible to estimate sampling error -- error in the population estimate based on the size of the sample (Groves, 1989). For surveys employing simple random sampling, sampling error is easily calculable based on the number of potential respondents in the population and the number of respondents in the sample. For example, this is the error displayed when media outlets report that a poll had a margin of error of, "plus or minus three percentage points."

Coverage Error

Coverage error occurs when members of the survey population cannot be sampled (Dillman, 2007). For many surveys, obtaining the appropriate sampling frame that minimizes coverage error can be quite challenging, for example, a study of homeless people in the United States. Coverage error should be much less problematic in Web-based surveys of college students and members of other organizations in which all members of the population have a published email address. Because colleges and universities maintain databases of their students, coverage error may be virtually nonexistent in many college student surveys conducted via the Web.

Measurement Error

Groves et al. (2009) define measurement error as, "departure from the true value of the measurement as applied to a sample unit and the value provided" (p. 52). Measurement error may occur due to a variety of factors, for example, a question may not adequately tap into the underlying construct that it is assumed to measure, the meaning of a question may be interpreted differently by different respondents, social desirability bias may keep some respondents from honestly reporting their behaviors regarding sensitive topics, and respondents may not be able to accurately recall the answers to questions they

are asked (Bradburn & Sudman, 1988; Dillman, 2007; Groves et al., 2009). Sociologists, psychologists, and researchers from other social science disciplines have developed an extensive literature regarding sound measurement. Research on survey measurement and measurement error include understanding cognitive aspects of survey response (e.g. successful recall), understanding unclear terms, and social desirability (see for example, Sudman & Bradburn, 1982; Tanur, 1994; Tourangeau, Rips, & Rapsinki, 2000). Measurement error plagues many surveys of college students (see Porter, 2011). However a thorough discussion of measurement error is beyond the scope of this dissertation.

Nonresponse Bias

Nonresponse bias can occur because not all sampled members of a population will respond to most data collection efforts (Dillman, 2007). If there are systematic differences between individuals who do not respond and those who do respond, survey results will be biased (Dillman, 2000; Groves, et al., 2009; Pike, 2008; Smith, 2002). Historically, response rates have been used to assess the extent to which nonresponse bias may be present in a survey (e.g. Dillman, 2000; Groves, 1989; Groves, et al., 2009), but except in the most extreme cases (e.g. a survey with a 95% response rate), response rates do not provide helpful concrete information about the range of potential nonresponse bias. For example, a survey of college seniors that achieved a 50% response rate may include an item asking whether or not students studied abroad. Suppose the survey found that fifty percent of respondents studied abroad. It is possible that the real estimate of the percentage of students who studied abroad would be anywhere between 25% (if no nonrespondents studied abroad) and 75% (if all nonrespondents studied abroad).

Nonresponse bias is extremely vexing to the survey researcher because it is not directly measurable; therefore the extent of this bias can only be estimated (with surveys with higher response rates assumed to have lower nonresponse bias (American Association for Public Opinion Research, 2004)), and conducting estimates of nonresponse bias is only possible under special circumstances, not in most surveys. As several authors have recently stressed (Groves et al., 2009; Hinkin & Holtom, 2009), achieving a higher response rate decreases the probability that survey results are affected by nonresponse bias, but does not necessarily decrease nonresponse bias itself. The nature of nonresponse bias will be explored more fully in Chapter 2.

To illustrate how nonresponse may or may not correspond with nonresponse bias, consider a hypothetical census of one thousand students regarding alcohol consumption. For purposes of this example let us envision that there is no measurement error (all respondents understood the question meaning in the same way, actively attempted to retrieve the information, successfully retrieved this information, and honestly reported this information) and that that there is no coverage error. One item in this survey asks respondents to report the number of alcoholic drinks they consumed in the past seven days. In this example, the true population mean is ten drinks with a normal distribution. Five hundred students respond to the survey (response rate = 50%), and the item mean is ten drinks. In this example, nonresponse does not appear to bias the survey results for this item.

Now, consider the same survey with an identical response rate. In this case, the survey mean may be twelve drinks, but the population mean is ten drinks. Therefore nonresponse appears to have biased the results with students who drank more being more

likely to complete the survey than students who drank less. This survey also contains another item that asks students to evaluate university policies about alcohol. It may be that students who trusted the institution to make fair alcohol policies were also more likely to complete the surveys than students who did not trust the institution to do so. Because two survey variables (number of drinks, and trust in the institution with regards to alcohol policies) covaried with response propensity for this particular survey, it is likely that nonresponse bias would affect calculations of the interrelationships between measures of alcohol consumption and attitudes toward alcohol policies.

Summary

Overall, this dissertation seeks to inform our understanding of nonresponse in college student surveys by asking: (a) "Who responds and who does not respond to college student surveys?" (b) "How do students' experience surveys from their institution?" and (c) "Should we conceptualize of surveys of college students as organizational surveys?" At the present time, there is a largely unrecognized crisis in higher education surveys in which it is possible that most of our surveys of college students are producing estimates that are so biased as to render survey results meaningless from a scientific perspective, with regards to the attitudes, beliefs, and behaviors they purport to represent. Achieving a better understanding of nonresponse in surveys of college students can lead to improvements in evaluation and assessment efforts and to academic research.

Chapter 2 will provide more detailed background about the current survey context, discuss theories of nonresponse, and review empirical nonresponse literature among the general population and college students. This chapter will conclude by

reviewing organizational research perspectives about nonresponse and will argue that college student surveys might be appropriately viewed through this lens. The next three chapters discuss the research questions, design, methods, and results for each of the three studies. I discuss the replication study in Chapter 3, the survey on surveys study in Chapter 4, and the focus group study in Chapter 5. Chapter 6 contains a synthesis of the studies' findings in light of the dissertation's overarching research questions, discusses implications for research and practice, and suggests next steps for continued research on this topic.

CHAPTER 2
LITERATURE REVIEW

Introduction

The goal of this chapter is to review what we know about survey response and nonresponse bias in order to provide context and support for the dissertation's empirical work. The chapter will consist of six sections. The first four sections provide a review of the state of the literature on nonresponse in general. The chapter will begin by describing the changes in survey response rates over time, highlighting the decline in response rates in the general population that has occurred during the past twenty years. The low response rates achieved by many surveys today is a defining characteristic of the current research climate and has sparked much of the need to learn more about survey response and nonresponse bias. This problematic aspect of survey research may threaten the foundation of much social science research. The second section will contemplate our current understanding of nonresponse bias, which is the primary reason we care about survey response in the first place. This section will also highlight approaches to the study of nonresponse that will inform the proposed methods of this dissertation. The third section considers the most influential theoretical perspectives on survey response from the survey research literature. The fourth section provides background about the empirical research on factors relating to survey response in the general population, for example demographic differences between respondents, topic effects, and survey design effects.

The next two sections introduce concepts and studies relevant to how we think about survey nonresponse in a college student population. In the fifth section, I will discuss the college student survey context, first describing response rates to current

student surveys, then reviewing the limited literature on student nonresponse. The sixth section introduces the theoretical approaches and empirical work of organizational researchers, which I will emphasize as being particularly appropriate for thinking about surveys of college students. This section also provides a synthesis of how our current understandings of response relate to organizational surveys of college students.

Section 1: Declining Response Rates

Documenting Declines in Survey Response Rates in the General Population

In the United States, increases in refusals and declines in the overall response rates to surveys of the general population began in the 1950s (Steeh, 1981), not long after survey research became an established, scientific way of collecting data. Frankel and Frankel (1987) cited the mid-1960s as the beginning of problematic levels of survey nonresponse, noting the increase of two wage-earner middle-class households as one cause of this change. However, declines in response rates and increases in refusals appear to have accelerated during the past two decades (Curtin, Presser, & Singer, 2005; Singer 2006; Stoop, 2005). In Singer's analysis of three recent phases of nonresponse research, she characterized the first period, which occurred from the middle 1980s through the early 1990s, as concentrated on establishing empirically whether response rates and cooperation rates to surveys were declining, as many members of the survey research community believed. This body of research confirmed that response rates were indeed declining throughout the developed world (de Leeuw & de Heer, 2002). In his 2004 review of the state of survey research, Tourangeau noted, "very few telephone surveys achieve response rates higher than 60%" (p. 783), and that refusals to take part in surveys

have been increasing throughout the world, necessitating greater efforts and expenditures to collect data for a single survey.

Difficulties in obtaining responses to surveys have been experienced by all sectors of the survey research community. However, response rates to some governmental surveys have not suffered the same fate as other survey efforts. For example, response rates to the American Community Survey increased from 95% in 2000 to 98% in 2009 (United States American Community Survey, 2010). Similarly, the 2010 United States Census achieved a 72% household participation rate to the mailed questionnaire, the same response rate as in 2000 (Groves, 2010).

The Office of Management and Budget, the Federal agency which authorizes surveys conducted by or on behalf of U.S. government agencies, requires that researchers conduct nonresponse bias analysis for any survey which achieve response rates of less than 80% and for any individual item with a response rate of less than 70% (Dillman, Smyth, & Christian, 2009). Although government surveys often have more credibility (and larger budgets) and therefore obtain higher levels of cooperation than those conducted by either the private sector or by universities (Dillman, et al., 2009), researchers often undertake extraordinary efforts for these surveys to achieve satisfactory response rates. Some of these governmental surveys achieve such a high response rate because selected respondents are required by law to participate. Other large surveys, for example the General Social Survey and the United States Census have maintained reasonably high response rates over time because of additional efforts in data collection (United States American Community Survey, 2010). For example, the 2010 U.S. census

sent replacement questionnaires to areas that had low response rates to the 2000 census mailings (Groves, 2010) in attempts to increase response to the mailed questionnaires.

Curtin, et al.'s (2005) analysis of the Survey of Consumer Attitudes and the General Social Survey (GSS) is a striking example of declines in response rates to general population surveys in the United States. Between 1979 and 1996 response rates for the Survey of Consumer Attitudes decreased from a high of 72% to low of 60%. By 2003 the response rate for this survey was 48%. Between 1979 and 1996 the response rate decreased by an average .75 percentage points per year, but from 1996-2003 the rate of decline accelerated to an average of 1.5 percentage points. Refusals comprised the largest percentage of the decrease in response rates. For example, the survey had a refusal rate of 19% in 1979, which grew to a refusal rate of 27% by 2003. The GSS suffered from a similar pattern of falling response, although not to the same extent (Curtin et al., 2005). In 2001 and 2002 the response rate was 70%, which, although quite good for most surveys, was extremely low for the GSS. Between 1975 and 1998 the GSS achieved a response rate lower than 75% only twice, so the response rates of 70% indicated a changing tide with regard to survey nonresponse.

Galea and Tracy (2007) noted that response rates to major, national health-related surveys had decreased over a thirty year period. For example, the response rate to the Behaviors Risk Factor Surveillance Survey conducted by the Center for Disease Control and Prevention fell from 71.4% in 1993 to 51.1% in 2005. The National Comorbidity Survey, described by Galea and Tracey as, "the largest, and for many the 'gold standard' cross-sectional study establishing prevalence of psychological disorders" (p. 643),

achieved a response rate of 82.4% during its two year data collection period from 1990 to 1992. In its replication from 2001 to 2003 it achieved a response rate of 70.9%.

Potential Reasons for Declining Response Rates

Researchers have suggested a number of factors that may be responsible for decreases in survey response rates and increases in refusals. In his 2002 presidential address to the American Association of Public Opinion Research, Dillman reflected on a number of changes in survey research over the past forty years, including the substantial increase in the number of survey requests experienced by many members of society. For example, Dillman recalled assuring potential respondents in the 1960s that there was a low probability of being asked to participate in surveys. In contrast, some people in the 2000s are asked to complete "many, many surveys, sometimes on a daily basis" (Dillman, 2002, p. 479). Presser and McCulloch (2011) documented a dramatic increase in United States Government surveys between 1984 and 2004 and attributed declines in response rates to the increase in surveys. Over this twenty year period the number of surveys approved each year by the Office of Management and Budget increased from 131 to 204 and the estimated number of survey responses increased fourfold, from about 2.6 million in 1984 to over ten million in 2004. This rate of change far outpaced the growth of the population (Presser & McCulloth, 2011). Writing about the field of epidemiology, Galea and Tracy (2007) argued that the increase in research studies has meant that potential participants are asked to participate in greater numbers of studies and that as this happens, potential participants view their participation as less meaningful than when fewer studies were conducted.

In addition to the growth of surveys and accompanying requests to complete them, the increase in unsolicited communications, for example phone calls, junk mail, and email spam, has made successfully reaching potential participants more challenging, as advertizing, direct marketing, event announcements, and survey requests might be labeled together as "junk mail" (Galea & Tracey 2007). Call screening technology such as answering machines and Caller ID (Link, Mokdad, Kulp, & Hyon, 2006), increasing numbers of unsolicited telephone calls (Keeter, Kennedy, Dimock, Best, & Craighill, 2006), and the rapid saturation of cellular telephones in the general population (AAPOR Cell Phone Task Force, 2010) have led to reduced response rates in telephone surveys.

Dillman et al. (2009) eloquently traced how changes in communication from face-to-face to electronically mediated forms such as email have actually resulted in a more difficult environment to obtain survey participation, as requests for participation are less personal, and it has become more socially acceptable to decline participation. Tourangeau (2004) speculated that declines in civic engagement, frustration with telemarketing, a decline in free time, and fears of identity theft and other privacy and confidentiality concern, were possible causes for increased survey refusals in the general population. The factors relating to survey response will be discussed in further detail in Section 4.

Declining Response Rates Summary

At the present time, it is clear that response rates to most surveys of the general population have fallen, refusals have increased, and that surveys that have maintained high response rates have done so through extraordinary efforts, legal requirements for individuals to respond, or a combination of the two (e.g. the United States Census). Researchers have posited a number of factors likely involved in the decrease in response

rates, including the proliferation of survey requests, increased unsolicited communication in general, declines in civic engagement and trust, and an increase in the social acceptability of declining to participate in a survey study. In the next section, I review the literature pertaining to nonresponse bias, to provide a deeper understanding of why declining response rates are a potentially significant problem for survey research.

Section 2: Nonresponse Bias

As discussed in Chapter 1, nonresponse bias occurs in surveys when the responses of survey participants differ systematically from what those responses would have been if everyone who had been sampled completed the survey (Groves et al., 2009). Concerns about nonresponse bias are not new. Writing nearly seventy years ago, Deming (1944) identified nonresponse bias as one of the major sources of error in surveys. Historically, researchers have relied on achieving a high response rate to minimize nonresponse bias, and high response rates have been viewed as synonymous with survey quality (Groves, et al., 2009). Because of the difficulty in measuring nonresponse bias, much of the nonresponse literature has focused on how to maximize response rate (Goyder, 1987; Groves, et al., 2009; Stoop, 2005), and many fewer studies have examined the nature of nonresponse bias (Groves et al., 2009).

The main reason for the focus on response rates rather than nonresponse bias is that estimating response bias is very difficult. In many instances researchers have no appropriate data with which judge the extent to which respondents and nonrespondents differed in variables of interest. However, in the past decade, several important studies have been published (e.g. Groves, 2006; Groves & Peytcheva, 2008; Peytcheva & Groves, 2009) that shed new light on our understanding of nonrespone bias. This section

will discuss three theoretical models of nonresponse bias, review various approaches to studying nonresponse bias, then turn to recent empirical studies from the public opinion literature.

Causal Nonresponse Models

Groves (2006) argued for the importance of theoretical models of nonresponse bias as a reformulation of the vexing conundrum of considering the situations in which problematic levels of nonresponse bias may exist. Groves and Peytcheva (2008) proposed three models that explain how nonresponse bias may be caused, each of which has different implications about how nonresponse bias could be addressed by survey practitioners. The three models focus on different relationships between the propensity to complete a given survey and the responses to individual survey items.

Separate Cause Model

In the separate cause model, the reasons for nonresponse are completely unrelated to response on a given survey variable (Groves & Peytcheva, 2008). For surveys in which nonresponse and values on a particular variable are unrelated, there should be no nonresponse bias regardless of the response rate. This could be thought of as random nonresponse or systematic nonresponse that is unrelated to survey variables. For example, in a Web survey, a survey administration error could result in failed delivery of every fifth survey request. In practice, it is hard to predict when nonresponse might have no relationship to survey variables of interest. Perhaps, a well-conducted study with a uniformly low salience topic and sponsorship might fit this model.

Common Cause Model

In the common cause model, the reason or reasons for response to the survey also affect response to a particular item (Groves & Peytcheva, 2008). For example, in a survey about students' attitudes toward community service, students who engage in frequent service activities may be more likely than their peers to complete the survey. Assuming that, in the aggregate, students who engage in service have more favorable attitudes toward service than those who do not, the results of this study would overestimate of students' favorability toward community service. Because participating in community service is a cause of both survey response and the mean score on the variable of interest, it would be theoretically possible to adjust for nonresponse bias in the measure of students' attitudes toward community service by statistically controlling for students' community service behaviors. If community service participation data were available for each person in the sample, statistical weights could be used to generate estimates of students' attitudes that would counteract the differences in response propensity between students who engage in service and those who do not.

Direct Survey Variable Cause Model

The third model is a direct survey variable cause model (Groves & Peytcheva, 2008). In other words, the variable itself causes changes in some individuals' response propensity. One example of this type of nonresponse would be in a Web survey about technology use, which would by its very nature under-represent those students who did not have regular access to the Internet or were not technologically savvy.

Causal Model Summary

The three models proposed by Groves and Peytcheva (2008) have the potential to be important tools for our consideration of nonresponse in surveys of college students. One contribution of these models is to provide an explanation for why some studies find that surveys with higher response rates have lower levels of nonresponse bias (e.g. Gallagher, Fowler, & Stringfellow, 2005), whereas others find that nonresponse bias can be problematic regardless of response rate. Some of the most obvious causes of nonresponse bias related to mode, for example the issue of computer access to a Web survey, may be less relevant for a college population than for a survey of the general population. That being said, it seems likely that in any given survey of college students, researchers should consider the extent to which nonresponse is due to factors represented by each of the three models.

Approaches to Studying Nonresponse Bias

Researchers have undertaken nonresponse studies using a variety of approaches. The techniques described below represent a great variety of ways to gain insight into nonresponse bias. Some techniques provide a researcher with numerical data pertaining to nonresponse bias on particular survey measures, whereas others investigate differences in characteristics between respondents and nonrespondents, or seek to understand how individuals decide whether or not to respond to a survey. None of these approaches provide perfect scientific corrections for nonresponse bias to all variables in a study, although some are much stronger than others. As described below, often the most illuminating techniques, for example a record-linking approach, are impossible to conduct with many surveys because baseline data does not exist for the sample in

question. Other techniques that are more easily undertaken, for example comparisons to existing data, may provide little information about nonresponse bias for a particular survey item (Groves, 2006; Porter & Whitcomb, 2005a).

Comparing Response Rates

One common practice among researchers is to compare the demographic characteristics of respondents to the population (Groves, 2006). If respondents are similar to the population, the researcher might conclude that the sample is representative of the population. Another way of using this technique is to examine response rates of various subgroups in a survey, for example Whites, Asians, African Americans, and Latinos/as. If the response rates for each subgroup are similar, a researcher might conclude that there are no differences in response bias for each group. Although this is a common practice in survey research, a recent meta-analysis of nonresponse bias studies, Peytcheva and Groves (2009) found that comparing response rates of subgroups failed to illuminate instances of nonresponse bias. Comparing demographic characteristics remains a helpful heuristic, for example if a population is 50% male and 50% female, but survey respondents are 20% male and 80% female, one might reasonable conclude that the survey will over-represent women's attitudes or experiences. However, just because survey demographics closely match that of the population or if subgroups respond at similar rates does not mean that nonresponse bias is unproblematic.

Comparisons to Existing Data

Another technique is to compare the estimates in a given survey to other data sources, for example federal surveys, like the U.S. Census or the General Population Survey, that are believed to produce "good" estimates (Groves, 2006). For example, a

researcher may compare the income distribution for a survey of Massachusetts residents to corresponding federal census data. This technique may be able to detect gross biases if an appropriate comparison can be found, but is not likely to be suitable for many surveys. This is particularly true for surveys of college students since there are no comparable "gold standard" surveys to which to compare data.

Use of Auxiliary Variables

Other approaches involve obtaining auxiliary variables for nonrespondents through various methods. For example, in some techniques personal interviewers record the characteristics of the residences of nonrespondents (Lynn, 2003), or using data from telephone survey screening (Groves, 2006; Groves and Peytcheva, 2008). One technique described by Lynn (2003) is the PEDAKSI methodology (Pre-Emptive Doorstep Administration of Key Survey Items). Interviewers in face-to-face surveys can employ this method when they conclude that they will be unable to conduct the full interview. The interviewer asks a small number of key questions and responses to these questions are supplemented by interviewer observations (e.g. type of dwelling, condition of house) and characteristics available in the sample record (e.g. population density of neighborhood, region). Obviously, this type of technique is only applicable in surveys utilizing interviewers who are able to collect data from individuals who will ultimately refuse to participate in the survey.

Early and Late Respondents Comparisons

The "early and late respondents" approach assumes that nonrespondents to a particular survey have characteristics more in common with respondents who completed the survey toward the end of the data collection period than respondents who completed

the survey at the beginning of data collection (Porter & Whitcomb, 2005a). This is sometimes referred to as a continuum of resistance model (Groves, 2006). Respondents who complete surveys at the beginning of an administration period are compared to those who complete the survey at the end of the administration to estimate nonresponse bias and to make necessary post-survey weighting adjustments if deemed necessary. Several studies show that the notion of a continuum of resistance has little validity (Ellis, Endo, & Amer, 1970; Ford & Zeisel, 1949; Groves, 2006; Lin & Schaeffer, 1995). I mention this technique because some researchers continue to use it.

Follow-Up Surveys

In a follow-up survey approach, a researcher samples a subset of the initial pool of nonrespondents and sends them additional survey requests. Often these follow-up surveys are shorter versions of the original survey that include some of the most important items. Responses to the follow-up survey are added to the data set and used to gauge nonresponse bias and create statistical weights if appropriate. The difficulty with this technique is that there will still be nonrespondents to the follow-up surveys, and it is likely that refusers to both the initial and follow-up survey are different than those initial refusers who then respond to the follow-up (Groves, 2006; Porter & Whitcomb, 2005a). However, there are studies that suggest that this approach can still provide some insight into nonresponse bias. For example, Voogt and Van Kempen (2002) conducted a nonresponse follow-up study to a Dutch national election study. One-half of the sample responded to the initial survey, slightly less than one-fourth (22%) responded to the follow-up, with the remaining members of the sample (28%) refusing to participate in either study, or being unable to be contacted in the follow-up study. Voogt and Van

Kempen also matched additional auxiliary variables (e.g. urbanization, mean regional education, neighborhood social class) from existing records. By using a follow-up survey, these researchers found substantial nonresponse bias to the original survey in background characteristics, voting behaviors and political attitudes that could not be corrected by using traditional weighting techniques based on demographic characteristics. Although this follow-up survey may not have produced perfect results, the survey estimates were substantially improved by using the follow-up survey to adjust for nonresponse bias.

Panel Approach

A panel approach examines differences between individuals who persist and those who drop out of a panel study (Groves, 2006). In this approach, a first survey is administered to a sample. Those who respond to the survey comprise the panel. A subsequent survey, or multiple surveys, is sent to the original panel and differences between the responses between the surveys are attributed to nonresponse bias (Groves, 2006). The limitation in this technique is that it cannot account for nonresponse bias that may be present in the construction of the original panel (Porter & Whitcomb, 2005a), since it is unlikely that the original survey achieved a 100% response rate. In addition, it is possible that differences between the panel survey and subsequent survey may be attributable to actual changes over time or to measurement error rather than nonresponse bias. That being said, the panel approach is one of the stronger ways to study nonresponse bias, particularly if the panel survey has a very high response rate to be considered akin to a census (Porter & Whitcomb, 2005a).

Archival or Record-Linking Approach

In another promising approach, researchers link administrative records or survey data for the entire population or sample to individual's survey responses. This results in a data set with information for both respondents and nonrespondents. For example, in a survey of residents of a particular city, municipal census data such as voter registration and occupation could be matched to each member of the sample. After conducting a survey, researchers can use data for the entire sample to analyze the factors related to survey response and nonresponse. The challenge of this approach is obtaining data for the population on the survey variables of interest, which is often particularly difficult because if one had this information it is unclear why a survey should be conducted in the first place. The strength of this approach lies in having data for all nonrespondents and respondents. It is important to note, that not all studies employing these techniques are measuring nonresponse bias per se. For example, Porter and Whitcomb (2005a) used a combination of a panel approach and record-linking to examine who responds to survey. Their analyses yielded important information about demographic, behavioral, and personality correlates of response, but did not provide the means to adjust their later survey estimates for nonresponse bias.

Population profiling, a term coined by Rogelberg and his colleagues (Rogelberg, Sederburg, Aziz, Conway, Spitzmuller, & Knight, 2003) to describe a type of record-linking approach, aptly describes a technique sometimes used by psychologists and organizational researchers. Population profiling involves administering a survey to a captive population, for example, students in a classroom setting. This initial survey includes an item asking about intent to participate in a future survey. Respondents to the

initial survey are later sent a second survey and data from both surveys are matched (e.g. Hox, de Leeuw, & Vorst, 1996; Rogelberg et al., 2003). The advantage of this technique is that attitudes about survey participation can be asked in the original survey, whereas one of the weaknesses is the artificiality of the design. Section six of this chapter contains an in-depth review of studies employing population profiling and critiques the shortcomings of this method.

Surveys on Surveys

Unlike follow-up surveys, panel approaches or other techniques for estimating nonresponse bias, surveys on surveys do not attempt to measure bias at all. Rather, surveys on surveys directly ask people about their attitudes toward and experiences with survey research and have been employed for over fifty years (Bergman & Brage, 2008; Goyder, 1986; 1987; Loosveldt & Storms, 2008; Roper, 1986; Schleifer, 1986; Sjoberg, 1955; Stocke, 2006; Stocke & Langfeldt, 2004; Stoop, 2004). For example, Roper (1985) conducted a similar project in order to learn more about public opinion toward surveys. Two-fifths of respondents reported never having been interviewed before, whereas one-tenth reported being interviewed more than five times. Three-fourths of respondents believed that polls worked for the public good and 18% reported not knowing. About three-fifths believed that poll results had “some influence” on things (versus almost no influence (9%), quite a lot of influence (21%), or too much influence (5%)). Looseveldt and Storms (2008) asked respondents the extent to which they agreed with statements such as, “Surveys are a useful way of gathering information” (p. 79), “Most surveys are a waste of people’s time” (p. 79), and, “Surveys create a more democratic society” (p. 79). Although limited by inevitable nonresponse, utilizing this technique provides a way to

understand how potential respondents view survey requests. Of course, this technique assumes that people have stable attitudes about surveys and can recall and report about previous survey experiences.

Summary of Approaches to Studying Nonresponse Bias

Clearly, researchers have developed a vast array of techniques in their efforts to better understand nonresponse bias. When researchers wish to examine potential nonresponse bias in any given survey resources and available data will often limit nonresponse analysis to comparing response rates across subgroups, comparisons to existing data, or to limited record linking (e.g. demographics). At times, researchers might have the resources to conduct follow-up surveys of nonrespondents. However, if one is conducting research for the purposes of understanding nonresponse bias, the panel survey and record linking approaches seem to have the greatest potential to provide valid estimates of bias, provided original panel and record data are of sufficient quality (Porter & Whitcomb, 2005a). In general, these estimates of bias are at the person level (e.g. athletes or extraverts being more likely to respond) rather than at a level that allows for correction of the estimate generated by a particular item (e.g. the percentage of students who are "very satisfied" with their university experience). Surveys on surveys by themselves are not ways of estimating of nonresponse bias. Rather, asking potential respondents directly about their experiences and attitudes about surveys can provide important insight into people's reactions to surveys and their thoughts about participation.

Empirical Studies of Nonresponse Bias

In the past decade, several studies have examined nonresponse bias and the relationship between response rate and response bias (e.g. Groves, 2006; Groves &

Peytcheva, 2008; Keeter, Kennedy, Dimock, Best, & Craighill, 2006; Merkle & Edelman, 2002; Peytcheva & Groves, 2009). One important finding from this area of inquiry is that nonresponse bias and nonresponse rate are not always related (Groves, 2006; Groves & Peytcheva, 2008; Keeter et al., 2006; Merkle & Edelman, 2002; Peytcheva & Groves, 2009). This recent scholarship has deemphasized the notion that low response rates necessarily result in biased data. Instead, these studies have focused attention on the idea that survey results are biased when people's propensity to respond to a survey is related to variables of interest measured by the survey (Groves et al., 2009). This new orientation toward nonresponse has led to some scholars (e.g. Keeter et al., Krosnick, 1999; Tourangeau, 2004) to question the notion that high levels of nonresponse are problematic, because it is not known when high levels of nonresponse are indicative of high levels of nonresponse error. For example, Keeter, Miller, Kohut, Groves, and Presser (2000) wrote:

> Nonresponse error is a function of both the nonresponse rate and the difference between respondents and nonrespondents on the statistic of interest. High nonresponse rates can still yield low nonresponse errors…and low nonresponse rates can yield high nonresponse errors. (p. 126)

However, Groves (2006), has cautioned that this research should not be interpreted as a signal to cease to care about response rates or nonresponse bias:

> The recent studies of Keeter et al. (2000), Curtin, Presser, and Singer (2000), and Merkle and Edelman (2002) lead to the impression that nonresponse rates are a much smaller threat to survey estimates than suggested by prior practical guidance. However, the articles need to be placed in the context of years of

> methodological research. In the extreme, they are misinterpreted as implying that there is rarely, if ever, a reason to worry about nonresponse bias. (Groves, 2006, 657)

The next sections describe studies that suggest high response rates do not reduce nonresponse bias, and studies that suggest that response bias is lessened through increased response rates.

Higher Response Rates Do Not Lessen Nonresponse Bias

Several studies conducted in the past twelve years provide evidence countering the long-standing belief that increases in response rates reduce nonresponse bias. For example, Merkle and Edelman (2002) conducted an analysis of election-day exit poll interviews and actual election returns by precinct. These researchers discovered that older voters were less likely to respond to surveys than younger voters and that older interviewers were more likely to obtain survey responses than younger interviewers. The interaction of age of respondent and age of interviewer was important, with older and middle-age voters being less likely to participate in interviews with younger interviewers. Most importantly, despite this response bias in survey completion, Merkle and Edelman found no relationship between response rates and nonresponse bias survey estimates. This finding is particularly surprising since interviewer effects, respondent characteristic effects and the interaction of these two were found to systematically affect the likelihood of survey response.

Keeter et al. (2000) found a similar lack of correspondence between response rate and response bias. These researchers conducted two random digit dialing household surveys (identical instruments conducted by the same organization) of the United States

population, one using standard calling practices and the other using a more rigorous strategy. The standard survey was conducted over a five day period, during which every number was called a minimum of five times, with one follow-up call made to households that initially refused. The rigorous study was conducted over eight weeks with a "more exhaustive effort" (Keeter et al., 2000, p. 128) to attempt to contact individuals and convert refusals. Sampled individuals in the rigorous study received an advance letter with a two-dollar pre-paid incentive. The standard survey achieved a 36% response rate, whereas the rigorous survey achieved a 60.6% response rate. Cooperation rates were 68.9% for standard study and 73.7% for the rigorous study. Statistically significant differences between the two surveys were found in seven demographic items, one behavior, one interviewer rating and five opinion items (out of 87 items asked of respondents, and four interviewer ratings). No differences between items on the two surveys were greater than nine percentage points. Keeter et al. has been cited as an example of surveys with low response rates producing unbiased estimates. Of course, this line of reasoning necessarily accepts the idea that a survey that achieves a response rate of sixty percent has itself produced valid estimates. Even if no differences between the two surveys had been found, it is possible that both surveys are erroneously estimating the population parameters in question.

Finally, it is important to mention a study in which raising response rates through token incentives was found to produce more biased estimates than conducting the survey without incentives and achieving a lower response rate.

Perhaps the most dramatic example of potentially harmful effects of increasing response rates is the incentive experiment reported by Merkle, Edelman,

> Dykeman, and Brogan (1998). In this exit poll experiment, a pen incentive increased overall response rates. However, the incentive increased Democratic Party voters' response propensities more than those of Republicans. As a result, the higher response rate condition (with incentives) had larger nonresponse bias for vote statistics than the lower response rate condition (without incentives). (Groves, 2006, p. 666)

Studies Suggesting Increased Response Rates Lessen Nonresponse Bias

Counter to the findings reported above, several studies have found reductions in nonresponse bias by raising response rates**.** For example, a study of several household surveys conducted in Great Britain revealed differences in variables of substantive interest as well as demographics between respondents who required more than five attempts or a refusal conversion in order to be interviewed compared to other respondents (Lynn, Clarke, Martin, & Sturgis, 2002). These researchers examined both the difficulty of contacting a respondent and the reluctance to cooperate and found no evidence of interaction between the two. They concluded that efforts to increase response rates by increasing number of contacts is likely to reduce nonresponse bias by capturing the interviews of individuals who were at home less frequently or otherwise less available to telephone interviews. In both Keeter et al. (2000) and Lynn et al. (2002) the issue of contacting respondents was a particular focus, since interviewers conducted these studies.

In a survey of Medicaid recipients, Gallagher et al. (2005) found that by raising response rates (to 68%) through three phases of data collection, mail, telephone, and personal interviews, the final sample was representative of the target population. Each mode was more successful at reaching different segments of the population than others,

for example, response from non-native English speakers were most successfully gathered via personal interview. More importantly, estimates on one of the survey's four constructs of interest, respondents' rating of health care, was significantly affected by the responses from the telephone phase of data collection, suggesting that greater nonresponse bias would have resulted if response rates had not been raised through the telephone survey phase of data collection.

Nonresponse Bias Meta-Analyses

Groves (2006) conducted a meta-analysis of thirty research studies containing a total of 235 estimates of survey nonresponse bias, with the majority of studies coming from medical journals. Groves and Peytcheva (2008) conducted another meta-analysis by examining 59 studies that had population data collected from a variety of sources. In both meta-analyses the goal of the research was to examine the impact of nonresponse rates on nonresponse bias. The articles included in the meta-analyses estimated nonresponse bias through different ways, using record linking, supplemental data for the entire sample, telephone screener data and follow-up survey data. Groves (2006) and Groves and Peytcheva (2008) found evidence of nonresponse bias, but determined that response rate was a relatively poor predictor of bias in a given survey. In fact, there were instances of a greater range of nonresponse bias on items within a survey than across surveys. Additionally, the various methods of measuring response bias seemed to effect the nonresponse bias estimates. Studies that employed telephone screeners or follow-up surveys produced greater estimates of nonresponse bias than those using record-linking frame data or supplemental data. In discussing these results, Groves (2006) recommended that blindly pursuing high response rates was probably a poor strategy for survey

researchers, but that "informed pursuit of high response rates is wise" (Groves, 2006, p. 668). In other words, it is essential that a researcher consider likely causes of nonresponse and their potential effects on survey estimates, rather than seeking to achieve a target response rate. In addition, Groves (2006) recommended collecting auxiliary variables on both respondents and nonrespondents, and to plan for post survey adjustments as standard survey practice. Groves and Peytcheva (2008) emphasized that high response rates can, in fact, reduce nonresponse bias, but cautioned that, "they do this less when the causes of participation are highly correlated with the survey variables" (p. 183).

Nonresponse Bias Summary

It is clear from the literature that nonresponse bias can be a problem in surveys, but that response rates are not particularly good indicators of its potential presence (Groves, 2006). The causal nonresponse models introduced by Groves (2006) invite us to think aggressively about the factors that may affect response propensity and item distributions on any given survey. If researchers are to pursue these examinations, it remains a necessity to further understand the factors that relate to nonresponse in college student surveys (discussed in Section 5).

This literature introduces several potentially fruitful techniques for studying nonresponse bias in surveys of college students, particularly the record-linking and panel approaches that have been used by Porter and Whitomb (2005a), and, though they do not directly measure nonresponse bias, surveys on surveys (Goyder, 1986). If one had the resources to conduct an exhaustive follow-up nonresponse study, it might be possible to achieve nearly universal responses from a college student population. For example, survey researchers at a small college could literally knock on doors, recruit friends of

nonrespondents to assist in data collection, and pay substantial sums (e.g. twenty dollars) to obtain responses from persistent refusals. Of course, such an endeavor would necessitate a college administration willing to prioritize such a study as well as substantial funding.

Section 3: Response Theories

This section begins by briefly discussing the literature related to contacting potential respondents, then turns to theories of survey compliance, focusing on social exchange theory and leverage salience theory, the two most influential theories of survey response. Because nonresponse bias is not readily detected, it is essential to have an understanding of how and why individuals respond to surveys in order to consider circumstances in which nonresponse bias may be affecting survey results.

Brehm (1998) described survey response as consisting of three stages: contact, eligibility and compliance. Other researchers have slightly different takes on what constitutes the survey response process, for example Dillman, Eltinge, Groves and Little (2002) focused on the notion of respondent incapacity rather than eligibility. Reio (2007) emphasized two types of nonresponse that can occur after successful contact: nonresponse due to "carelessness," and nonresponse due to "noncompliance" (p. 49). Most of the theories of survey response focus on the compliance stage (Reio, 2007), but it is important to consider nonresponse that occurs because of a failure to contact the sampled individual. Nonresponse due to noncontact can introduce different biases than nonresponse due to refusal (Goyder, 1986; 1987; Groves et al., 2009). For example, in web surveys of college students, students who do not receive a survey request because

their mailbox has exceeded its storage quota or because they do not regularly check their email may differ from other students.

Contactability

This subsection describes some of the challenges of contacting potential respondents, in other words, making a sampled person aware that he or she has been selected to participate in a survey and asking him or her to complete a questionnaire. This is something that may seem to be quite simple, but is often unexpectedly complicated. Groves et al., (2009) refer to the propensity to be contacted for a survey as "contactability" (p. 192). As these researchers have noted, some subpopulations have different likelihoods of being contactable than others. For example, households in which someone is almost always home are easier to contact that households in which no one is home for periods of time. For household surveys, households with more members, and with elderly people or children, are easier to contact, and those in urban areas are less easy to contact (Groves & Couper, 1998).

Different survey modes are subject to different causes of noncontact. Personal interviews can be stymied by the inability to gain access to an apartment because of security measures such as gates, and noncontact due to the sampled individual being out when an interviewer attempts to make contact (Groves & Couper, 1998; Groves et al., 2009; Ross, 1963). Telephone surveys may be thwarted by call screening, answering machines, disconnected phone lines, and the failure of an interviewer to call when the sampled individual is home (Groves & Couper, 1998; Groves et al., 2009). Mail surveys may not be successfully delivered to the sampled individual, either through interventions at the post office, in an intermediate delivery site (e.g. a central mail room in an

apartment building), or in the household. Sosdian and Sharp (1980) described a number of ways in which a sampled individual may never have the opportunity to decide whether or not to participate in a mail survey. For example, as a way of managing a high volume of junk mail, a household may be in the habit of discarding, unopened, any mail that appears to be of a particular type, or one family member may screen the mail of others.

Web surveys have several stages at which contact may be circumvented. In many surveys of college students, the data collection process starts by sending an email message to a sample of students to an email address on file with the college or university. Each email message contains an explanation of the survey project and asks potential respondents to click on a link that will take them to the Web survey. Some messages may never appear in the inboxes of potential respondents. Although many colleges and universities rely on institutionally supplied or student maintained email addresses to administer surveys, there is always a possibility that a few of these addresses may have errors, resulting in an incorrect email address for the potential respondent and a failure to deliver the survey request. Vehovar, Batagelj, Manfreda, and Zaletel (2002) have noted that small errors in spelling, "which usually survive postal delivery – are fatal" (p. 230) in attempts to deliver a survey invitation via email. As these authors noted, not all incorrect addresses will be discovered by a survey researcher because some incorrect addresses will stimulate a return message from the email server notifying the sender that the message was undeliverable, whereas others will be "lost" (Vehovar et al., 2002, p. 230). In my personal experience as an Institutional Researcher, I found that a small number of survey invitations fail to be delivered for every survey project because the intended recipients' electronic mailboxes have exceeded their storage quota.

With the increasing sophistication of email technologies, students may create automated forwarding that directs email messages to a set of email addresses to a single email account. For example, a student may preserve a pre-college, commercial account and forward his or her university email to that account. Successful transmission of messages from the university account to the commercial account requires that the student has correctly set up auto-forwarding. In this instance, and in instances in which the survey is directly sent to a commercial email provider, the message may not be delivered successfully if the invitation is marked as spam and sent to a potential respondent's spam folder. It is also possible that a potential respondent has marked a previous survey request or other university communication as spam and will not receive a particular invitation. Even prior to interruption at the individual user level, if a survey host is not "white-listed," the email provider's filters my filter out email invitations. Of course, just because a student has an email account does not necessarily mean that he or she regularly checks the account or has access to a computer. Although computer saturation is quite high for many college student populations (Kaplowitz, Hadlock, & Levine, 2004) there are college student populations who do not have daily computer access. Finally, although many institutionally-provided email accounts are supposed to be accessible only to the college student, at least some students have given their parents access to their accounts, presenting an additional potential barrier a student's receipt of the survey, since a parent could delete the request, move the message to another folder or mark it as "read" thereby increasing the chances that a student does not notice the message.

Web Survey Response Steps

In order to tackle Web survey response, it is important to consider the steps necessary for a student to complete a Web survey, assuming the email invitation is successfully delivered to a student's inbox. First, the student must open the email message, perhaps read the invitation, click on the embedded link, and complete the survey in order for a response to occur. At present, we know little about how students go about managing their email, for example how they make the decision to open a particular message and how subject line content affects this decision, whether or not they flag some messages for later action, how they make decisions to delete a message, and how often they open email messages on their telephones rather than computers.

One principle for surveys in all modes is to differentiate the request from marketing efforts or sales attempts (Groves et al., 2009). Whether or not a student conceives of a survey request as "junk mail" it is important that a survey request distinguish itself from other types of perceived spam, for example advertisements and Internet scams (Vehovar et al., 2002). Many researchers who survey college students assume that students look at the originating or spoofed email address (an email that appears to be sent from one account but is delivered from a different account or server) and subject line in making the decision to open a particular message (Porter & Whitcomb, 2003a), but we do not know that this is necessarily the case. In the same manner that a mailed survey request might be recycled before opening due to an incorrect assumption about the contents of the envelope (Sosdian & Sharp, 1980), it is possible that some students delete email survey requests without correctly identifying the content of the email message.

Complicating these issues is the advent of cellular telephones on which users can access the World Wide Web and their email accounts. Because of the size of the display, and difference in keyboard, attempting to complete a Web survey on a cellular telephone would be quite different than on a personal computer. For many Web surveys, the size of the cell phone screen and the way in which the phone handles Web pages makes it impossible for students to complete a survey on their phone (Callegaro, 2010). For example, Callegaro demonstrated how certain mobile devices cannot render tables or grids that are often used for banks of items in Web surveys. Numerous researchers have studied contactability issues for other survey modes (e.g. Groves & Couper, 1998; Lynn, Clarke, Martin, & Sturgis, 2002; Sosdian & Sharp, 1980). Although some similar studies of Web surveys exist (e.g. Vehovar et al., 2002) more work in this area needs to be conducted to understand all of the challenges with Web survey delivery.

Compliance

Scholars have conceptualized of the survey response process using a variety of theories and ideas from the social sciences (Goyder, Boyer, & Martinelli, 2006). The two most influential theories of survey nonresponse are social exchange theory (Dillman, 1978; 2000; 2007; Dillman et al., 2009) and leverage salience theory (Groves, Singer, & Corning, 2000). These theories specifically deal with the compliance stage of survey response: respondent cooperation or noncooperation with a survey request.

Social Exchange Theory

Dillman (1978; 2000; 2007; Dillman et al., 2009) brought a theoretical foundation to the understanding of survey nonresponse, which had been previously dominated by largely atheoretical approaches (Goyder, 1987). Social exchange theory is the basis for

Dillman's tailored design method (2000; 2007; Dillman et al, 2009), originally formulated as the total design method (1978). Dillman has posited that the decision to participate in a survey involves an individual balancing the perceived costs and rewards of participation. Dillman differentiated social exchange theory from economic exchange theory by emphasizing that potential respondents must trust social norms for social exchange to operate. Unlike economic exchange, social exchange involves rewards that are not necessarily material (e.g. enjoyment of the survey) as well the idea of unarticulated, vague future consequences that help shape behavior, for example that the survey will lead to social benefits. According to Dillman, when a person is presented with a survey request, he or she weighs the costs (e.g. time) against the perceived rewards (e.g. feeling good about helping someone, appreciating the opportunity to influence decisions). In order to encourage potential respondents to complete a survey, Dillman recommended that survey researchers employ design characteristics that are likely to be perceived as rewards. For example, Dillman suggested, "showing positive regard" (2007; p. 15), thanking respondents, constructing an interesting questionnaire, and providing token material incentives as ways of rewarding respondents through thoughtful survey design. Dillman has focused on mail surveys in developing social exchange theory, an emphasis that likely affects his perspective on survey response across modes.

Leverage Salience Theory

Groves, Singer, and Corning (2000) developed leverage salience theory to explain how a person decides whether or not to participate in a survey. At one point in time, survey nonrespondents were thought to be a relatively fixed group of individuals, who tended not to respond to surveys at all (Groves, 2006). Although this may be true for a

small subset of nonrespondents, it is now clear that different people make their decision of whether or not to participate in a survey based on different criteria, for example topic, sponsor, incentive, and perceived burden. In thinking about survey response theory, it is important to distinguish between persistent attitudes toward surveys in general that may relate to response (e.g. enjoyment of surveys or beliefs that surveys are inaccurate) and factors that may relate to the decision to participate in a particular survey (e.g. topic or incentive). Leverage salience theory can take these various factors into account. Attributes of a request to participate have different levels of importance to each potential participant, and each respondent may be more or less aware of any given attribute.

For example, when invited to participate in a survey, one potential respondent might view the topic as interesting, and therefore positive, and important; a token incentive to be positive but fairly unimportant; and the time burden of the survey to be negative, but unimportant. According to leverage salience theory, the salient factors for this individual would have a net positive valence so he or she would participate in the survey. A second potential respondent may see nothing interesting about the topic, but may place a lot of importance on the survey incentive. If the incentive is of sufficient salience and value, this individual might also participate. According to leverage salience theory, interviewer attributes and the emphasis the interviewer places on various elements in the survey introduction can affect individuals' decisions about participating in a survey.

Leverage salience theory can be used as a framework to understand the survey response process in any given situation. Among its strengths is the ability for the theory to hold under various assumptions. For example, a potential respondent may be actively

processing the survey request or may be relying on heuristic cues (i.e. cognitive short-cuts) to decide whether or not to participate. In either case, leverage salience theory is applicable. The decision by someone to participate in a political poll before an election, a market research intercept study in a shopping plaza, or a satisfaction survey of college students may all be understood through leverage salience theory.

Although leverage salience theory provides the mechanism for understanding these individual processes, it offers no direct information about how larger contexts may affect groups of potential respondents. For example, students for whom English is a second language may find a survey to be more cognitively burdensome than do students who are native English speakers. According leverage salience theory, the greater cognitive burden operates on the individual level and disposes potential respondents to choose not to participate in the survey. However, for the survey practitioner, leverage salience theory offers limited specific insight to improve survey design in such a study. Groves et al. (2000) suggest that, armed with an understanding that various factors motivate different respondents to participate in a survey; interviewers can individualize their survey invitations to appeal to each potential respondent. In Web surveys of college students, such a recommendation is inapplicable.

Perhaps one of the more helpful upshots of leverage salience theory is that it provides a theoretical basis to stimulate researchers to consider where nonresponse bias may arise in a particular survey. If researchers can speculate successfully about what populations are likely to be underrepresented, they can attempt to maximize response rates for particular subgroups. For example, in a survey asking college students about residential life and campus activities, students who are not engaged in “traditional”

campus life may be disproportionately likely to fail to respond to the survey request. Offering incentives that may be attractive to this group, for example the chance to win a video game system, may help bring members of this subgroup into the sample. Leverage salience theory can provide the theoretical rationale for such a decision.

Active and Passive Nonresponse

Another important theoretical concept is the notion of active and passive nonresponse, the idea that nonresponse may be a function of the active decision to refuse to participate or carelessness or other unintentional failure to complete a survey. Sosdian and Sharp (1980) argued that a "lack of motivation rather than overt resistance" (p. 399) typified the responses in their follow-up survey of nonrespondents to a previous mail survey. More than half of respondents in Sosdian and Sharp's follow-up survey reported not having interest or time to complete the initial questionnaire they had received, for example reporting that they forgot about the survey, lost it, or found time to complete it. Some respondents reported that they had believed that they were not the intended recipients of the original survey. The public opinion research literature differentiates between nonresponse due to noncontact and nonresponse due to refusal (Groves et al., 2009). This distinction is important because nonresponse due to refusal is thought to be less random and therefore potentially more bias-inducing than nonresponse due to noncontact. In contrast, the differentiation of nonresponse due to carelessness or whimsy and nonresponse due to refusal plays a relatively small role in the theories of public opinion researchers. Perhaps this is due to the number of foundational studies in the field conducted by interviewers (e.g. Groves & Couper, 1998) rather than through self-administered surveys. This concept is, however, a central component of organizational

researchers' thoughts about survey nonresponse, which will be discussed in detail in Section 6, and is an important facet of the questions of this proposed dissertation. Of course, some of the evidence showing a distinction between passive and active nonresponse is of questionable value. For example, potential respondents who indicate that they forgot to complete or were to busy to complete a survey may be lying as a social nicety rather than bluntly refusing to participate in the survey.

Other Theories of Survey Response from the Public Opinion Literature

Several other social science constructs have been employed to understand survey response. Groves, Cialdini, and Couper (1992) argued that a number of social psychological theories provided useful tools for understanding survey participation, for example compliance theories (i.e. theories of reciprocation, social validation, authority, scarcity and liking), helping tendencies, and opinion change. Groves and Couper (1998) advanced the notion that respondents' levels of social isolationism would affect their likelihood of completing a survey. Other theorists (e.g. Bosnjak, Tuten, & Whitman, 2005; Hox, de Leeuw, & Vorst, 1995; 1996) have applied reasoned action or planned behavior models to the study of survey response. The most problematic conceptual difficulty with a reasoned action or planned behavior approach to survey response is the likelihood that many decisions to participate in a survey are made using automatic processing (i.e. relying on cues and cognitive shortcuts) rather than fully engaged deliberation (Groves & Couper, 1998) (see Petty, Cacioppo, Strathman, & Priester (1994) for a discussion of these two parallel methods of information processing).

It is also important to note that a substantial body of research regarding survey response is largely atheoretical (Goyder, 1987). A common example of a nonresponse

study is a simple experimental design that manipulates aspects of the survey (e.g. incentive or no incentive, one contact or two contacts, advanced notice or no advance notice, personalized correspondence or form letter), which Goyder (1987) argued is implicitly behaviorist. These types of studies (e.g. Andreasen, 1970; Blumberg, Fuller, & Hare, 1974; Brennan & Charbonneau, 2009; Galesic & Bosnjak, 2009; House, Gerber, & McMichael, 1977; Martin, 2009; Mayer & Pratt, 1966-1967; Nederhof, 1983; Nevin & Ford, 1976; Parsons, & Medford, 1972; Pickery, Loosveldt, & Carton, 2001; Willimack, Schuman, Pennell, & Lepkowski, 1995) have focused on how a researcher might yield higher rates of survey return from a stimulus – reaction perspective, without much consideration of why people responded differently. One potential result of these numerous atheoretical studies on nonresponse is the lack of research integration in the field (Goyder, 1986; 1987).

Response Theories Summary

Dillman's most recent articulation of social exchange theory (Dillman et al., 2009) nicely situates the theory alongside leverage salience theory. Whether intended or not, it is apparent that leverage salience theory and social exchange theory are not incompatible. Rather, leverage salience theory seeks to explain the individual survey decision process, whereas social exchange theory argues that the most essential component of the decision to participate in a survey is a trust in the social exchange that undergirds potential respondents' weighing the costs and benefits of participation. Social exchange theory and leverage salience theory both provide convincing perspectives for thinking about survey response in the general population. One way in which leverage salience theory differs from social exchange theory is that it provides the basis for

someone to respond to a survey in which no trust in the social exchange process exists. A person may participate in a survey because it is easier to comply than refuse, particularly for a low-burden survey, or because of financial reward, for example a survey that provides payment. However, given the distinctive character of college student surveys, it is unclear if these models adequately specify the most important constructs involved in college student survey response. In order to understand why people respond to surveys it is important to examine the individual factors relating to survey response, in other words the weights tipping the survey decision in leverage salience theory.

Section 4: Factors Relating to Survey Response

Groves and his colleagues (Groves, et al., 2004; Groves & Couper, 1998) have articulated a framework containing four dimensions of the survey context that may affect survey response: (a) individual characteristics of the respondent (e.g. gender, level of education), (b) societal factors (e.g. urbanicity), (c) survey design features (e.g. survey mode, incentive, personalization), and (d) interviewer characteristics and behaviors (e.g. interviewer gender). According to Groves et al. (2009) survey researchers only have control over survey design and interviewers, and have no control over individual and societal factors. This idea has resulted in a body of research that has largely focused on how survey researchers can maximize response by manipulating survey design features and interviewer behaviors. Although this model is the most comprehensive framework of influences on survey response, a consideration of interviewer effects, which have been found to be an important factor in general population studies (e.g. Bates, Dahlamer, & Singer, 2008; Brehm, 1993; Campanelli & O'Muircheartaigh, 1999; Groves & Couper, 1998; Hox & de Leeuw, 2002; Pickery & Loosveldt, 2002; Pickery, Loosveldt, & Carton,

2001), is inapplicable to an approach to Web surveys – a very common mode for college student surveys. In a model of factors affecting Web survey response, Vehovar et al. (2002) modified Groves et al.'s (2009) model substituting technology environment factors for interviewer factors. Factors from these four dimensions affect both the contact and cooperation elements of survey response. The next section reviews the ways in which these factors have been found to influence survey response. Because of the unique technology environment in which many college surveys are conducted, this topic is discussed in Section 5. In the next three subsections, I discuss the important findings from the literature on societal level factors, survey design factors, and individual level factors.

Societal Environment

Societal environment factors have not been studied as extensively as survey design factors or individual level factors related to survey response. In large part, this is due to the fact that, for the most part researchers have no way of affecting the societal environment. The research in this area comes from two main branches of inquiry. First, there is body of literature examining the effects of urbanicity and rurality on survey response (e.g. Groves & Couper, 1998). More recently, researchers have developed a small body of literature that examines survey response differences by nation (e.g. Stoop, 2005) and culture (e.g. Johnson, O'Rourke, Burris, and Owens, 2002). This second line of inquiry seems to be driven by researchers conducting multinational survey projects who seek to understand how culture influences nonresponse.

Culture

Johnson et al. (2002) argued that just as evidence has been accumulated that culture impacts survey respondents' comprehension of items, retrieval from memory, and other cognitive survey tasks, culture is also likely to impact survey nonresponse. Studies that have compared response rates among different racial/ethnic groups have produced mixed results, but Johnson et al. (2002) noted that some studies in the United States suggest cooperation is higher for Latino populations, with the exception of Cubans, than for other racial/ethnic groups. However, examinations of panel studies in the United States have found greater rates of attrition among people of color than among Whites (Johnson et al., 2002). Moreover, comparisons of survey response rates among different European countries, the United States, Canada and Australia have found differences in response rates and cooperation rates by nation. For example, Stoop (2005) reported that response rates to the European Social Survey in 2002-2003 ranged from a low of 33.5% in Switzerland to a high of 80% in Greece.

Johnson et al. (2002) argued that differences in individual and collectivist cultures as well as perceived power relationships between survey researchers and potential respondents would also affect nonresponse. For example, the cultural influence contributing to nonresponse would be greatest for a low power, highly collective population with the survey organization perceived as an out-group, and would be least for a low power, highly collective population with the survey organization perceived as an in-group. For example, a White, American university research team conducting personal interviews in poor areas of Japan would likely attain high levels of nonresponse.

There are few studies that examine the role of culture in survey non-response, and those that do exist suffer from many limitations, particularly how "cultural" variables are operationalized. For example, Johnson, Lee, and Cho (2010) hypothesized that differences in masculinity-femininity, low and high power distance and individualist-collectivist orientations in subcultures of Illinois would affect survey response. Johnson et al. (2010) matched U.S. census data to a random digit dialing telephone survey with a 32.7% response rate. Researchers used zip code level data to create cultural measures, for example the percentage of multi-generation households for the individualist- collectivist measures. In logistic regression analyses, these researchers found that sampled individuals in a community with a higher collectivist orientation were less likely to respond to the survey, controlling for urbanicity. The rather weak cultural indicators, which were acknowledged as such by the researchers, are one potential reason for the lack of association between other cultural factors and survey response. This study is notable for its attention to an under-examined area of survey non-response, rather than for its findings.

Urbanicity

One of the most common differences in response to household surveys is urbanicity (Groves & Couper, 1998; Groves & Peytcheva, 2008; Porter & Umbach, 2006; Steeh, 1981; Stoop, 2005). Groves and Peytcheva described two sets of reasons why people living in urban environments are less likely to complete surveys than people living in the suburbs or in rural areas. First, some other person-level characteristics related to non-response are overrepresented in urban areas, for example people living alone and people without children. Second, Groves and Peytcheva explained, "social psychologists

have observed that the pace of urban life, filled with fleeting, superficial interactions with strangers, sharply contrasts with the deeper, multidimensional relationships among residents of nonurban settings"(p. 180). From a social exchange perspective, one might attribute lower participation among people living in cities to lower levels of trust compared to people living in small towns.

Societal Level Factors Summary

There are two important aspects of societal level characteristics for this dissertation. First, individual institutions have environments that can be described as more or less urban. Some campuses are located in the heart of a city, whereas others are in rural areas or towns. In addition, some campuses that are located in fairly rural areas, have large campus housing facilities that have the effect of creating a somewhat urban environment on the campus through dense student housing. Porter and Umbach's (2006) study, described in Section 5, used measures of urbanicity in an analysis of differences in institutional response rates to NSSE. Second, societal level factors are typically considered at the nation-state or ethno-cultural level. However, individual colleges and universities have their own cultures and norms of behavior, suggesting that like societies, institutions can affect survey response. Moreover, given the relatively small size of colleges and universities, it is possible that faculty and administrators could attempt to create an ethos of survey cooperation at an institution.

Survey Design Characteristics

Don Dillman's (1972; 1978; 1991; 2000; 2007, Dillman et al., 2009) analyses and research syntheses of design features relating to survey response formed the backbone of public opinion research thought and practice for mail and telephone surveys. Dillman

drew upon research on the effects of a vast array of survey design features on survey response rates, most notably for mail surveys. The design features that have been studied included the use of survey deadlines (e.g. Henley, 1976; Martin, 2009; Nevin & Ford, 1976), the personalization of correspondence (e.g. Andreasen, 1970; McCoy & Hargie, 2007; Matteson, 1974), the use of a personal signature on a survey invitation (e.g. Kawash & Aleamoni, 1971), mail questionnaire color (e.g. Greer & Lohtia, 1994; Matteson, 1974); type of return postage in mail surveys (e.g. Armstrong & Lusk, 1987), use of registered mail (e.g. Eisinger, Janicki, Stevenson, & Thompson, 1974), survey length (e.g. Blumberg, Fuller, & Hare, 1974; Dillman, Sinclair, & Clark, 1993), variations in modes of follow-up methods (e.g. House, Gerber, & McMichael, 1977) telephone survey introductions (e.g. Houtkoop-Steenstra & van den Bergh, 2000), and advance notice of mail surveys (e.g. Parsons & Medford, 1972) and telephone surveys (e.g. Goldstein & Jennings, 2002; Link & Mokdad, 2005). Several studies have examined differences in response rates for face-to-face surveys and mail surveys (Goyder, 1985; Krysan, Shuman, Scott, and Beatty, 1994). Of particular interest for this study is the body of literature examining the effect of survey sponsor (e.g. Etter, Perneger, & Rougemont, 1996; Greer, Chuchinprakarn, & Seshadri, 2000; Greer & Lohtia, 1994; Goyder, 1982; Hawkins, 1979; Heberlein & Baumgartner, 1978; Jones & Linda, 1978; Schneider & Johnson, 1995). Particularly large numbers of studies have examined the effects of incentives (e.g. Nederhof, 1983; Trussell & Lavrakas, 2004; Warriner, Goyder, Gjertsen, Hohner, & McSpurren, 1996; Willimack, et al., 1995). Web surveys have spawned similar investigations examining the effects of automated versus manual password entry (Crawford, Couper, & Lamias, 2001), varied estimations of survey length (Crawford,

Couper, & Lamias, 2001; Galesic & Bosnjak, 2009; Heerwegh & Loosveldt, 2006), personalization (Heerwegh, 2005; Heerwegh, & Loosveldt, 2006; Porter & Whitcomb, 2003a), and visual displays (Walston, Lissitz, & Rudner, 2006) on survey response.

Several reviews and meta-analyses of design characteristics have been published to assist survey practitioners in navigating these findings (e.g. Church, 1993; Fox, Crask, & Kim, 1988; Linsky, 1975; Yammarino, Skinner, & Childers, 1991), which, though numerous seldom have been integrated with previous findings or survey response theory (Goyder, 1986). Dillman's work (1978; 1991; 2000; 2007; Dillman et al., 2009) provides essential information for the administration of surveys and suggests important factors for researchers to consider for situations in which existing research is not definitive. For example, Dillman (2007) has specified that respondent-friendly questionnaires, multiple contacts with an additional "special contact," return envelopes with first class stamps, personalized correspondence and token prepaid incentives are essential design elements to maximize response to mail surveys. Web surveys can employ three of these techniques – respondent-friendly questionnaires, multiple contacts, and personalized correspondence. The most persistent findings across studies examining the effects of design characteristics are the importance of multiple contacts and the effectiveness of token pre-paid cash incentives (Dillman, 2007, Dillman et al., 2009).

Contacts

For nearly a century, survey researchers have known that using multiple contacts is one of the most important factors affecting the survey response (e.g. Toops, 1926). Multiple contacts are important for several reasons. They provide more than one opportunity for a potential respondent to see the survey request. For example, the original

request may have been mis-delivered, the potential respondent may have mislaid the request, or responding to the request may have slipped the potential respondent's mind. In addition, multiple contacts provide an opportunity for researchers to use different potential levers to elicit cooperation by emphasizing different elements of the project, for example low respondent burden or the sponsor of the survey. Multiple contacts can also communicate that the survey effort is important. Dillman (2007) recommended five survey contacts for mail surveys, including a "special" contact that differs from other contacts (e.g. sending a reminder via certified mail). Social exchange theory stipulates that providing new information or otherwise changing the nature of a survey contact would be more likely to elicit response than simply re-sending the original contact (Dillman, et al., 2009). Schaefer and Dillman (1998) conducted a relatively early study of Web survey contacts and confirmed that multiple contacts were important for this mode just as they are for mail, telephone and face-to-face surveys. Cook et al.'s (2000) meta-analysis of response rates to Web surveys found that three contacts was the optimal number for a high response rate, lower than the number recommended by Dillman. Although the exact number of contacts may be the subject of some debate. It is clear that it is essential to employ at least three contacts to consider a survey to be well-conducted.

Incentives

Incentives are often employed in surveys to stimulate respondent cooperation (Groves & Couper, 1998; Singer, 2002). The survey research literature boasts an extensive research base about the effectiveness of incentives in increasing response rates including several reviews and meta-analyses (e.g. Armstrong, 1975; Church, 1993; Goritz, 2006; Goyder, 1987; Linsky, 1975; Singer, 2002). The primary finding from this

literature is that surveys that employ token prepaid incentives do produce higher response rates than those without incentives regardless of mode. Most incentives (e.g. pens, golf tees, and small amounts of cash) are conceived as "tokens" of goodwill that seek to operate norms of reciprocity as delineated in Dillman's (2007) social exchange theory. A leverage salience approach would not necessitate that incentives be conceived as tokens, but could in fact be payments for participation. For example, Warriner et al. (1996) found that prepaid cash incentives, but not charitable contributions or lotteries increased response rates to a Canadian general population survey. It should be noted that most of the literature on incentives refers to relatively small cost incentives (e.g. one or two dollars, chocolate, or a pen) to each member of the sample, rather than sometimes substantial payments (e.g. $100) for refusal conversion (Groves, et al. 2009).

Church (1993) analyzed studies employing pre and post-paid monetary and nonmonetary (e.g. pens, golf tees, lottery drawings) incentives. Church found meaningful increases in response rates for studies employing pre-paid monetary and nonmonetary incentives, and found no differences between monetary and nonmonetary incentive effects. However, the rather low value of the monetary incentives (mean of $1.38) may have resulted in this finding. Because the monetary incentives were so low in value, they likely operated in potential respondents' minds as token incentives that cost the researcher very little, similar to a pen or golf tee, rather than as payments

Sponsorship

Numerous studies have found effects of survey sponsors on response rate (Groves, 2006; Groves et al., 2009). Governmental surveys usually achieve higher response rates than academic or private sector surveys (Groves et al., 2009), surveys from

colleges and universities tend to have higher response rates than private sector surveys (Dillman, 2007; Groves, 2006). According to Groves et al. (2009) in situations in which the survey sponsor has a connection to the target population, as would be the case in organizational surveys of college students, "the strength of the connection is related to the response propensities" (p. 204-205). The importance of sponsorship is generally thought to relate to convincing potential respondents of the legitimacy of the survey. Historically, respondents were more likely to trust the survey intentions of government and universities than those of businesses (Groves et al., 2009).

Topic Effects

One of the most important factors that can influence a potential respondent's decision to participate in a survey is survey topic (Groves, et al, 2009; Groves, Presser, and Dipko, 2004; Pickery, Loosveldt, & Carton, 2001; Roose, Lievens, & Waege, 2007). For example, Groves et al. (2004) manipulated topic in surveys of five populations: (a) teachers, (b) new parents, (c) people age 65 or older, (d) political contributors, and (e) a random sample, with known connections to a particular topic: (a) education and schools, (b) child care and parents, (c) Medicare and health, (d) voting and elections, and (e) issues facing the nation, which served as the control. In general, people for whom one would suspect the topic to be most relevant were more likely to participate in the survey than were members of other groups. For example, teachers were more likely to take the survey on education than were new parents, those age 65 or older, or the random sample, (74% vs. between 60% and 41%) and teachers were more likely to take the survey on education than they were to take surveys on other topics (74% vs. between 71% and 57%). However, political contributors were more likely to take any given survey than

were members of any other group. Groves et al., (2004) hypothesized that this may be due to either the failure to operationalize a survey topic that did not have political relevance, or that political contributors may have other characteristics that predispose them to survey participation.

In considering the ramifications of these finding for survey practitioners, Groves et al. (2004) argued; "Only those influences linked to the survey statistics of interest need cause concern to the analyst" (p. 25). In other words, response rates in and of themselves are not determinants of survey quality. Rather, any amount of nonresponse that is related to a variable or construct in the survey is problematic. For example, some college students may not respond to an engagement survey because they are disaffected from the college experience, which would likely result in biased estimates. By including incentives, utilizing different modes of administration, emphasizing survey participation for the good of society, and highlighting the sponsoring survey organization one may mitigate the effect of survey topic by diversifying the response pool. In addition, Groves et al.'s (2004) research implied that over-emphasizing a survey topic might exacerbate effect this effect. In other words, perhaps some vagueness about the survey topic, but not deception, may be optimal. However, in practice, this may be impossible to achieve. For example, using terms like "student survey" in a survey of college students may still emphasize student identity to potential respondents and may bias results towards respondents who have stronger identity as students (e.g. more involved on campus, full-time rather than part-time).

In a later experiment, Groves et al. (2006) conducted a survey manipulating questionnaire topic and incentive. These researchers sent one of two surveys, either a

survey about birding or a survey about the interior design of shopping malls, to three different samples: birders, World Wildlife Fund donors, and a general population sample. Each individual was randomly assigned to a two-dollar prepaid (token) incentive group or a no-incentive group. Members of the birding sample were much more likely to complete the birding survey compared to the mall design survey (74.7% vs. 36.2% in the no incentive condition, 83.7% vs. 57.1% in the incentive condition), whereas the other samples were more likely to return the mall design survey in both conditions. In all permutations of survey and sample the incentive condition produced a higher response rate than the no-incentive condition. The topic effect operated as expected, but was decreased by using an incentive.

Survey Design Characteristics Summary

This subsection highlighted some of the most studied survey design effects. In addition to respondent-friendly questionnaires, number of contacts, incentives, sponsorship, and topic effects are four of the most salient features related to survey response. These design features are important to keep in mind when considering how students experience survey requests (e.g. Do students receive respondent-friendly questionnaires?) and their decisions to respond to surveys (e.g. Are incentives important? Do particular topics induce participation?). Having discussed societal level and survey design factors related to survey response, the next section turns to individual-level characteristics.

Characteristics of Individuals

For seventy years researchers have been finding differences between nonrespondents and respondents in the general population and in subsets of the

population, such as retired YMCA secretaries and retired school teachers (Britton & Britton, 1951), southern youth (Macek & Miles, 1975), college alumni (Reuss, 1943), science fair participants (Edgerton, Britt, & Norman, 1947), political activists (Rudig, 2008), and the elderly (Cohen & Duffy, 2002). Nonrespondents have been found to be more likely to be administrators or college teachers than elementary or high school teachers (Britton & Britton, 1951), less intelligent (Macek & Miles, 1975; Reuss 1943), to have less science aptitude and to have performed less well in a science fair (Edgerton, Britt, & Norman, 1947), and to be less healthy than survey respondents (Cohen & Duffy, 2002). Election studies in Canada have found refusers more likely to be vote Liberal (Durand, Blais, & Vachon, 2002). In a recent, well-conducted study employing over one thousand sets of identical and fraternal twins, researchers have found evidence of genetic predisposition to participate in surveys (Thompson, Zhang, & Arvey, 2010). Researchers hypothesized that because a number of personality and dispositional characteristics are influenced by genetics (e.g. helping behaviors, compliance, trust, reciprocation wariness, agreeableness), that genetics will explain some variance in survey response behaviors. At their most basic level these findings show that respondents and nonrespondents to a particular survey are different.

Demographic Characteristics

Researchers have consistently found several demographic characteristics to be related to response rates in surveys of the general population. For example, the elderly are less likely to respond to survey requests (Goyder, 1987; Kaldenberg, Koenig, & Becker, 1994; O'Neil, 1979). African Americans typically have lower response rates than Whites (Groves et al., 2009). Men refuse survey requests more often than women (Groves et al.,

2009; Pickery, Loosveldt, & Carton, 2001). Individuals with lower levels of education are disproportionately nonrespondents (Hauser, 2005; O'Neil, 1979; Pickery et al., 2001). Lower income individuals are less likely to respond to surveys (Goyder, 1987; Goyder, Warriner, & Miller, 2002; O'Neil, 1979; Van Goor & Rispens, 2004), but higher income individuals can be more difficult to contact (Goyder, 1987) and to respond (Goyder, et al., 2002) than the population as a whole. This combination of income and education factors gives rise to the assertion that surveys can produce a middle class bias (Goyder et al. 2002).

The Wisconsin Longitudinal Study provides a particularly compelling source of data on individual factors of survey nonresponse (Hauser, 2005). This study has followed a sample of approximately ten thousand individuals beginning with a survey of educational plans of all high school seniors in Wisconsin in 1957. Follow-up studies using exhaustive efforts to find and contact members of the sample have occurred in 1964 (87% response rate of living members of original sample), 1975 (92.7% of living members of original sample), and 1992 (87.2% of living members of the original sample). Hauser conducted a logistic regression analyzing response to the 1992 survey, examining the role of gender, educational attainment, adolescent IQ, rank in high school class, and civic involvement, and found that IQ, high school grades and civic involvement were associated with for differences in response. Perhaps more importantly, Hauser found that apparent differences in response that might be attributed to gender or educational attainment were no longer significant effects when IQ, civic involvement and grades were entered into the equation.

Privacy

Typically, a respondent's willingness to complete a survey is contingent upon his or her belief that the people responsible for data collection will protect his or her identity and will only report responses in an appropriate manner. Groves et al., (2009) emphasized the importance of ensuring confidentiality and the security of data in establishing trust with potential respondents. Singer, Mathiowetz, and Couper (1993) analyzed respondents' concerns about confidentiality and privacy and responses to the mail returns of the 1990 U.S. census. Because the 1990 census suffered from low response to the initial questionnaire, a survey was conducted about response to the census in order to test several hypotheses for low response rates. Employing a logistic regression, Singer et al. found real but small effects of general privacy concerns and trust in the census bureau's handling of census data on the likelihood of completing the initial census questionnaire for White respondents. A follow-up study (Singer, Van Hoewyk, & Neugebauer, 2003) conducted with the 2000 census produced similar findings with regard to the main conclusion: Privacy concerns have a small but real affect on census response propensity.

General Survey Attitudes and Previous Survey Experience

In Roper's (1985) "survey on survey" study one-half (51%) of respondents reported finding polls "enjoyable and satisfactory," five percent reported that they were "annoying and unsatisfactory," about two-fifths (42%) reported that they were "somewhere in between." A small collection of studies have found that people have reasonably stable attitudes toward surveys in general (Rogelberg et al., 2001), and that

people's general attitudes and previous survey experiences are related to their willingness to complete future surveys (Goyder, 1986).

Rogelberg et al. (2001) constructed measures of survey enjoyment and perceptions of survey value and tested the unidimensionality and reliability of these measures in customer and college student samples. In the college student study, Rogelberg et al. (2001) administered these scales along with a variety of other measures, such as personality and satisfaction measures as well as items measuring willingness to participate in future surveys, to 154 students in six psychology classes. These researchers found that survey value and survey enjoyment were positively related to respondents' reports of being willing to participate in a subsequent telephone, in-person, or mail survey.

In a survey of the Flemish general population, Loosveldt and Storms (2008) assessed the extent to which respondents perceived survey value, survey costs, survey enjoyment, survey reliability and survey privacy, with the hope of constructing reliable measures of survey attitudes in order to understand the survey climate. In a follow-up survey of nonrespondents to a previous survey, Loosveldt and Storms found that nonrespondents were more likely to have negative views of survey cost, survey value, survey privacy and survey enjoyment than were respondents to the original survey.

Potential respondents' past survey experiences affect their subsequent attitudes and survey behaviors. In a Swedish survey on surveys study that used samples of people who participated in two surveys as well as a random sample, Bergman and Brage (2008) found that respondents who had felt pressured to participate in one of the previous studies reported more negative attitudes toward future surveys. One of the most important

findings in this line of research comes from Goyder's (1986) survey on survey work in Ontario. Goyder, perhaps the most noted proponent of surveys on surveys, found that people who received more requests to participate in surveys had more negative attitudes toward surveys.

Factors Relating to Survey Response Summary

Clearly, a panoply of factors affect survey response. Dillman et al.'s (2009) synthesis of design factors relating to survey response, along with the work of Groves and his colleagues (Groves et al., 2009) provide excellent guidance on eliciting cooperation and considering potential sources of bias due to design features, sponsorship, and topic effect. Vehovar et al.'s (2002) framework of response factors is helpful in thinking about the diverse array of influences on survey response. The greatest potential problem with the models proposed by Vehavor et al. and Groves et al. (2009) is the assumption that the researcher has no control of the technological environment or societal environment. Although this may be the case for most surveys, colleges and universities are small organization which may be able to consciously change their micro-societal and technological environments. These ideas will be explored in the examination of surveys of college students in the next section.

Section 5: Survey Methodology in Surveys of College Students

The first four sections of the literature review have focused on surveys of the general population, describing declining response rates, nonresponse bias, response theories and factors related to response. This section highlights important research studies that have focused on survey response among college student populations. The section begins by briefly reviewing the state of response rates in surveys of college students.

Second, I discuss factors related to response in college student populations. This section illuminates ways in which college student response appears to be similar and different to response in the general population.

Response Rate Decline in College Student Surveys

Response rates in surveys of college students have followed similar trends to general population studies, and several higher education researchers have expressed concern for decreasing response rates (Asiu, Antons, & Fultz, 1998; Dey, 1997; Laguilles, Williams, & Saunders, 2011; McGinnis, 2006; Pike, 2008; Porter, 2004; 2005; Porter & Whitcomb, 2003a; 2003b; 2004; 2005a; Porter, Whitcomb, & Weitzer, 2004; Sax, Gilmartin, & Bryant, 2003). Recent administrations of several prominent national studies of college students illustrate the current problem of declining response rates. The studies described below involve a large numbers of institutions, receive media attention, are relied upon by institutional decision makers, and are the basis for a number of higher education research studies.

Perhaps the most widely recognized survey of college students is the National Survey of Student Engagement (NSSE), which was administered to students at 603 colleges and Universities in 2010 (National Survey of Student Engagement, n.d.). The NSSE is used for assessment purposes at many institutions in addition to being a source of data for numerous scholarly publications. As shown in Table 2.1, the responses rates for the NSSE Web survey over the past six years have never exceeded 50% and are diminishing (National Survey of Student Engagement, 2005; 2006; 2007a; 2007b; 2008; 2009; 2010). Institution level response rates for colleges and universities employing paper only surveys have been slightly lower than the response rates for the Web

administered survey. In writing about the development and first administrations of the National Survey of Student Engagement, Kuh (2001) acknowledged the challenge of obtaining high response rates, citing a response rate of "about 42 percent for each of the three administrations" (p.17) (two pilot tests and the first national survey conducted in 2000). Although Kuh indicated that researchers would endeavor to increase response rates to the NSSE, to date these researchers have not been successful.

Dey (1997) reported that a follow-up mail survey to the nationally administered CIRP Freshman survey of incoming students had response rates ranging from 65% to 40% between 1966 and 1974, but had a response rate of 21% for the years 1987-1991. Results of another prominent survey, Your First College Year (YFCY) survey administered by Web and mail by the Higher Education Research Institute, reported a mean response rate of 48.2% among participating institutions in 2005 (Hurtado, Sax, Saenez, Harper, Oseguera, et al. 2007). Publicly available reports for the 2007 (Liu, Sharkness, & Pryor, 2008) and 2009 (Ruiz, Sharkness, Kelly, DeAngelo, & Pryor, 2010) survey administrations do not include information about response rates.

In the college health field, the College Alcohol Study (CAS) and the American College Health Association's National College Health Assessment (NCHA) are two of the most notable surveys of college students. As Table 2.2 illustrates, response rates to the CAS have declined each year since its inception and fell precipitously when the survey changed from a paper and pencil instrument to a Web survey (Jans & Roman, 2007). Similarly, the NCHA attained response rates ranging from 20% to 23% in six administrations between 2006 and 2009 (American College Health Association, 2007; 2008; 2009).

Potential Reasons for Declining Response Rates in College Student Surveys

I discussed several potential reasons for the decline in response rates in surveys of the general population in Section 1. Many of these concerns also seem applicable for surveys of college students, for example privacy concerns, declines in civic engagement, the proliferation of survey requests and unsolicited communications. In a study of students at the United States Air Force Academy, Asiu et al. (1998) reported that students resented the time it took to complete surveys and thought that surveys were invasions of privacy. Porter (2004) cited changing cultural norms and increases in academic and marketing surveys as potential causes of survey nonresponse in college student populations. Thirty years ago, Steeh (1981) suggested that "disillusionment with the uses of survey results and overexposure to the survey process" (p. 53) led to increases in survey refusals in surveys of the general population. Indeed, several researchers have advanced the notion of survey fatigue as a cause of nonresponse bias in college student surveys (Asiu et al., 1998; Porter, 2005; Porter et al., 2004).

For college student surveys, the change from telephone or paper surveys to Web surveys is likely responsible for additional declines in response rates, as several researchers have found lower response rates to Web surveys than paper and pencil surveys (Kwak & Radler, 2002; Sax, Gilmartin, & Bryant, 2003; Tomsic, Hendel, & Matross, 2000; Umbach, 2004). Umbach (2004) has pointed out that access to the Web may differ among college student populations, potential resulting in lower response rates for students at some institutions. If any of these potential reasons for declines in nonresponse are correlated with the survey variables in any given study, the result will be an increase in nonresponse bias for those items.

College Student Survey Response Rate Summary

Low response rates are evident in some of higher education's most prominent surveys, for example the National Survey of Student Engagement. A few higher education researchers have expressed concern about response rates in surveys of college students (e.g. Pike, 2008; Porter, 2005; Umbach, 2004), with some researchers speculating that over-surveying (Asiu et al., 1998; Porter, 2005; Porter et al., 2004) use of Web surveys (Sax, Gilmartin, & Bryant, 2003; Tomsic, Hendel, & Matross, 2000; Umbach, 2004) and changes in cultural norms (Porter, 2004; Tourangeau, 2004) may be causes of the declines in response rates. Despite low response rates to many surveys, many higher education researchers seem to be ignoring the potential problem of nonresponse bias (Hutchinson & Lovell, 2004).

Factors Relating to College Student Nonresponse

Technology Environment

When people began collecting data via the Web, the problem of coverage error precluded Web surveys from being effective tools for general population surveys (Couper, 2000; Fricker, Galesic, Tourangeau, & Yan, 2005). However, in organizational contexts like colleges and universities, coverage error was not necessarily a problem. In a relatively short period of time, researchers at many campuses could sample potential respondents from the entire population of interest since a number of colleges and universities provided email accounts to students. Moreover, college students at many campuses have had near-universal Internet access and are regular Internet users (Kaplowitz et al., 2004). Today, college students are required to use the web for many basic administrative functions, communication and research.

At the end of the twentieth century, despite studies showing that Web surveys produced lower response rates than their telephone and mail counterparts (e.g. Cook, Heath, & Thompson, 2000; Kwak & Radler, 2002; Schaeffer & Dillman, 1998), some influential scholars in higher education advocated that researchers turn to Web surveys in order to minimize the potential drops in response rates. For example, in describing the advantages and disadvantages of Web surveys, Upcraft and Wortman (2000) erroneously wrote that "Return rate may be greater and more timely" (paragraph 5), and that "Web-based survey responses [SIC] rates are consistently higher than mailed or telephone surveys" (paragraph 5). Unfortunately, Web surveys continue to achieve lower response rates than surveys conducted through other modes. In a recent meta-analysis of response rate experiments, Manfreda et al. (2008) found that Web response rates were an average of 11% lower than other survey modes.

Early analyses of Web surveys in higher education found numerous differences between respondents and nonrespondents, attributed as a mode effect of this new survey technology. Tomsic, Hendel, and Matross, (2000) compared mail and Web responses on a student experiences survey conducted at the University of Minnesota in 1997 and 1999, as well as a 1998 survey of graduate students. Each year, students were much more likely to complete the survey via mail than via the Web, but Web response doubled between 1997 and 1999 from 7% to 14%. Men were more than twice as likely as women to respond to each survey via the Web. In the 1999 administration first year students and sophomores were much more likely than juniors and seniors to respond to the Web survey. Tomsic, et al. suggested that Web surveys would grow in their effectiveness to

assess student attitudes as students become more comfortable and familiar with the Internet in general.

As Web surveys of college students were more frequently employed, other studies examined mode effects using data from prominent surveys of college students (e.g. Carini, Hayek, Kuh, Kennedy, & Ouimet, 2003; Sax, Gilmartin & Bryant, 2003). In an examination of mode effects in the 2003 NSSE survey (response rate = 42%), Carini et al. (2003) found that students who completed the survey via the Web reported higher gains in all scales, with the exception of general education gains, compared to students who completed the paper survey. However, the effect size was quite small (five of the eight scales had an effect size of less than .1) except in a measure of gains in computing and information technology (b = .274). Carini et al. suggested that the novelty of the Web might elicit more positive responses, but that these differences, overall, had little effect. Of course, one aspect of mode effects can be that each mode differentially prompts segments of the sample to respond to the survey. The mode effects observed by Carini et al. could be solely attributed to differences in nonrespone bias between the paper and Web versions of the NSSE, rather than properties of the instruments or modes per se.

Sax, et al. (2003) utilized a sample from the CIRP and Your First College Year surveys to investigate mode effects between Web and mailed paper surveys (overall response rate = 21.5%). These researchers found several factors that predicted whether a student would complete a Web survey, including being a traditionally-aged college student, living on campus, having two majors, being a science or mathematics major, attending a selective institution and attending an institution with strong academic support and attending a selective institution. Through focus groups with students following the

survey, Sax et al. (2003) identified privacy concerns and lack of information regarding how often students checked their university email accounts as potential impediments to survey completion. However, these findings may be limited by the extreme burden of the survey (over 200 items on 32 pages) and low response rate.

Leung and Kember (2005) conducted a study examining mode effects at a university in Hong Kong by sending students an engagement survey both via mail and by email with a link to the Web, achieving an overall response rate of 63.8%. They found that engineering students were more likely to respond to the Web survey than the mail survey, but that no differences were found for students in any other college. Studies of the general population have also found that respondents who are heavier users of technology or hold more positive attitudes toward technology are more likely to respond to Web surveys (Vehovar, et al, 2002). These studies found inconsistent mode effects. However, many of these effects could be seen as indicators of students who might be more familiar with web technology, for example traditional-age students, science and math majors, engineering students and students who live on-campus. It is important to note that several of these studies were conducted ten years ago, when Web technology was less ubiquitous than in the present day.

Salutations, Personalization, and Sponsorship in Web Surveys of Students

Porter, Whitcomb and their colleagues (Porter, 2004; 2005; Porter & Umbach, 2006; Porter & Whitcomb, 2003a; 2003b; 2004a; 2004b; 2005a; 2005b; 2007; Porter, Whitcomb, & Weitzer, 2004) have been the most prolific authors about survey response and nonresponse in the recent higher education literature. The majority of these research studies have examined the effects of various survey design features on survey response

rates with high school and college populations. For example, Porter and Whitcomb (2003a) surveyed high school students who had contacted a liberal arts college for information, but who did not apply to the college. These researchers manipulated (a) the type of email address from which the request was sent, either a personal address (e.g. ekolek@sareo.edu) or an institutional address (e.g. sareo@educ.umass.edu); (b) the "signature" on invitation, either administrative assistant or director; (c) the salutation, either "Dear Student" or inserting the student's name; and (d) the office from which the request was sent, either the admissions office or institutional research. Because this sample had requested information from the admissions office it was thought that this manipulation tapped into the salience of office in the minds of the potential respondents. The overall response rate was 13.6%. No differences in response were detected for any of the study's conditions. However, this survey achieved such a low response rate that it is doubtful that we should conclude that these elements of survey design do not matter. Rather, it seems more reasonable to conclude that the primary cause of nonresponse was the combined low importance of sponsor and survey topic and that manipulations of other aspects of design were comparatively irrelevant in this context.

In contrast, Heerwegh's (2005) study showed that personalizing email invitations in surveys of college students increased response rates. Heerwegh, like Dillman (2000), argued that an increase in response rate should be expected with personal salutations because of the operation of social exchange theory: that by receiving a personal salutation the receiver feels more valued and important. Heerwegh conducted an experiment at a university in Belgium in which half of a random sample of students received a personalized salutation in a survey request, for example, "Dear Ethan Kolek," and the

other half received a survey request with the salutation “Dear Student.” Heerwegh found that response rates were higher for personalized salutations than non-personalized (68.1% vs. 61.2%) and detected no differences in sample composition. Of course, cultural differences between university students in Belgium and the United States may limit the direct applicability of these findings.

Lottery incentives for participation are often used in Web surveys of college students (Porter & Whitcomb, 2003a). Historically, research on lottery incentives in both Web and mail contexts has produced inconsistent findings (Singer, 2002), with some survey research experts discouraging their use (Dillman, 2000). Lottery incentives are often employed because of lower costs (Singer, 2002) and more practical administration in a Web survey context (Porter & Whitcomb, 2004).

Porter and Whitcomb (2003b) conducted an experiment to see if varying levels of lottery incentive ($50, $100, $150, and $200) impacted response rates in a Web survey of high school students who had requested information from Wesleyan University, but who had not applied for admission. The one hundred dollar lottery incentive was the only condition in which the response rate was found to be higher than that of the control group (16.2% response rate compared to 13.9% response rate for the control group). Although this difference was statistically significant, it is very small from a practical perspective, and these researchers concluded that incentives had little effect on response rates. Porter and Whitcomb (2004) argued that in addition to a lack of effect on response rates, lottery incentives divert resources and may engender an expectation for being entered in a drawing as a norm of survey participation. In contrast, Laguilles, Williams, and Saunders (2011) found that lottery incentives substantially increased response rates in surveys of

college students. Across four Web surveys of undergraduates at the University of Massachusetts Amherst, lottery incentives increased response rates between five and ten percentage points compared to control conditions.

College and University Characteristics

Porter and Whitcomb (2005a) observed that "institutions themselves have 'personalities' and social climates" (p. 148). It makes sense that individual colleges and universities may exhibit different social forces that may influence students' survey response tendencies, perhaps similar to the societal level factors affecting survey response discussed in Section 4. Porter and Umbach (2006) conducted a study examining differences in response rates of the 2003 administration of the NSSE at 321 institutions. The mean institutional response rate for the sample was 43%. Porter and Umbach conducted an analysis with individual and institution level variables. Several institutional characteristics were related to institutional response rate (individual level results are reported later in this section). Controlling for other characteristics, response rates were lower at urban schools compared to rural schools, schools with greater density (as measured by number of student per acre of campus), and schools with a larger percentages of part-time students. Public schools had lower response rates than private schools. In addition, computer access, as measured by the number of computer per undergraduate, had a ten to eleven percentage point effect on the probability of survey response.

These findings lend further credence to the idea that campuses may have their own ethos with regards to survey participation. Porter and Umbach (2006) measured tangible differences between colleges and universities -- however it seems likely that

cultural differences beyond measures of urbanicity, density, and computer saturation would also cause different response rates at different institutions. For example, students at one institution may see how previous survey results have informed campus policy, whereas students at another campus perceive that administrators do not care about students' perspectives. Another way that campus norms may affect survey response is based on the level of over-surveying that occurs. Some campuses have adopted formal survey policies that can limit the number of survey requests that students receive, whereas other campuses have no such policies (Porter, 2005). These findings are also consistent with an organizational research perspective on survey nonresponse. The higher response rates in smaller institutions and in institutions with more full time students may occur because of the potential for stronger feelings of trust, belonging or organizational identity.

Person-level Factors in College Student Surveys

Studies involving college student populations have found similar trends to the demographic factors in the general population. For example female students typically have higher response rates than male students (Dey, 1997; Hutchison, Tollefson, & Wigington, 1987; Nielsen, Moos, & Lee, 1978; Pike, 2008; Porter & Umbach, 2006; Porter & Whitcomb, 2005a; Woosley, 2005). However, there is greater uniformity among college students as a group than the general population as a group among several dimensions, including age, education level, occupation, computer saturation, and technology use. Therefore, several of these factors that have been associated with nonresponse in the general population, for example occupation and education, are unlikely to be related to nonresponse in a college student population. Next, I describe

several studies that examined differences between college student respondents and nonrespondents.

In a well-conducted longitudinal study of college students, Nielsen et al. (1978) surveyed over 1,200 seniors all of whom had completed a survey during their freshman year. The follow-up survey achieved a 90% response rate. These researchers found several differences between respondents and nonrespondents, including freshman gpa, athletic participation, alcohol consumption, preferences for political science, engineering and business majors, number of friendships, sex, and socioeconomic status. When controlling for sex and socioeconomic status, preferences for engineering and business, and a deviance measure were the only differences between respondents and nonrespondents. However, the magnitude of these differences was quite small.

Hutchison, Tollefson, & Wiginton (1987) surveyed a sample of students in English composition classes with an in-person survey, achieving a response rate of 100% (N=295). They then sampled English composistion students who were not part of the original sample, contacting students by mail with a telephone follow up to a subsample of nonrespondents (response rate 54%, n = 163). The two groups did not differ in terms of satisfaction with the academic environment. However women and high achieving students were overrepresented in the mail survey compared to the in-person survey.

Dey (1997) used a panel approach consisting of an initial sample of students who completed the CIRP survey as entering first year students and respondents and nonrespondents to a follow up survey (response rate = 20.7%) supplemented with data submitted by institutions' registrars (response rate = 68%). Students with higher grades, White students, and women were more likely to complete the follow-up survey.

Additionally, years of foreign language study, having a scholarly orientation (as measured by the CIRP), having parents who are married and living together, expecting to earn a bachelor's degree, year of studying math, and self-rating of mathematical ability were positively correlated with response. The strongest negative correlates of response were being African American, reporting partying more hours per week, having a life goal of being successful in one's own business, being well off financially, and believing that homosexual relationships should be outlawed.

Asiu et al. (1998) conducted a survey about students' perceptions of surveys at the United States Air Force Academy. Of the 590 students sampled, 369 completed the survey resulting in a response rate of 61%. Asiu et al. found that four-tenths of respondents indicated that they were concerned (either "concerned, or "somewhat concerned") about the confidentiality of their survey responses. In Asiu et al.'s (1998) study of Air Force Academy students' perceptions of survey climate, 97% of respondents reported feeling "over-surveyed." In an analysis of open-ended comments about what over-surveying meant to respondents, Asiu et al. found that students particularly objected to the number of surveys that seemed to have little relevance. Respondents noted that surveys had a "lack of stated purpose, fail[ed] to provide feedback to participants, [and that] too many surveys…focus on every minute aspect of the students' lives"(p. 8).

Porter and Whitcomb (2005a) and Porter and Umbach (2006) have published the two most important recent studies in the higher education literature that examine nonresponse in college student surveys. Porter and Whitcomb's (2005a) study is partially replicated in the secondary data analysis reported in Chapter 3. Porter and Whitcomb (2005a) linked information from the database at a liberal arts college and from the CIRP

survey of entering students (which had a response rate of over 90%) to a sample of students who they asked to participate in a series of four surveys over the course of a semester. Response rates to the surveys ranged from 45% to 39%. Nearly 30% of students completed no surveys, 23% completed one survey, 18% completed two surveys, 16% completed three surveys and 14% completed all four surveys. Porter and Whitcomb conducted an ordered logistic regression to examine the influences of demographic characteristics, class year, grade point average, pre-college engagement, privacy concerns and Holland personality type on survey response. These particular measures of Holland personality types were first constructed using data from the 1986 and 1990 National CIRP Datasets (Smart, Feldman & Ethington, 2006). In the final model that included institutional data and CIRP data, Porter and Whitcomb found that women, more socially engaged students, and students with investigative personality types were more likely to participate in survey requests. Students on financial aid and with an enterprising or artistic personality type were less likely to participate in surveys. Porter and Whitcomb noted that these particular personality measures contained items involving academic confidence. In earlier models in the study that did not include personality factors, grade point average was a significant predictor of survey response.

These researchers speculated that these personality indictors shared variance with grade point average resulting in a lack of significance in the final model. These personality characteristics related to being entrepreneurial and oriented toward economic success are consistent with Dey's (1997) findings. The most important ramifications of the study is the possibility of systematic bias based on student engagement and personality, even after controlling for demographics like gender.

Porter and Umbach (2006) sought to determine why response rates varied across institutions by examining NSSE response rates, specifically looking at institutional characteristics like urbanicity, student characteristics, and survey design features. At the student level, Porter and Umbach found that women were eleven percentage points more likely than men to respond, African American first year students were three percentage points less likely to respond than White first year students, African American seniors were five percentage points less likely to respond than White seniors, and students with higher SAT scores were more likely than students with lower SAT scores to respond to the survey. These findings are somewhat different than Porter and Whitcomb's (2005a) study of nonresponse, perhaps because of differences in the institutions included in this study. Alternatively, demographic and SAT variables may be significant predictors of survey response in Porter and Umbach's (2006) study because of model specification error, since it did not include the engagement and personality measures that were found to be important predictors of response in the single-institution study.

Woosley (2005) conducted a study of a cohort of first-year students at a Midwest university examining retention to the second year. The 3,555 members of this cohort were surveyed. For students living in residence halls (89%, n=2,625) surveys were distributed by resident assistants either in meetings or informally. Surveys were sent by mail to students who lived off campus (11%, n=1,717). A follow-up reminder with a second survey was sent by mail to all initial nonrespondents. Students who lived off campus received two reminders. The survey achieved an 80% response rate. Matched admissions test scores were obtained for 2,949 students (83% of the initial group). Based on research suggesting that survey response might be related to "attachment,

involvement, or commitment" (Woosley, 2005, p. 415), Woosley hypothesized that survey response would be related to pre-entry characteristics and that, controlling for demographics, survey response would be positively related to educational outcomes.

Men were less likely to respond to the survey than were women, and students with higher high school ranks were more likely to complete the survey. The overall retention rate at this institution was 78%, with 80% of respondents and 69% of nonrespondents continuing to a second year. Respondents had a higher fall grade point average then nonrespondents (2.77 vs. 2.34). In a logistic regression model, responding to the survey was a significant predictor of retention. Unfortunately, the research article does not provide odds ratios, which would indicate the effect size of survey participation controlling for other characteristics. Woosley's (2005) study suggests that survey response might be correlated with another characteristic important to persistence. Survey response could be associated with satisfaction with the institution, integration, or simply the ability to meet deadlines and respond to administrative requests. Future research into the correlates of nonresponse and persistence seem warranted, but are beyond the scope of this project.

Summary

A wide range of factors relate to college student survey response, several of which differ from those in the general population. First, college students have a greater level of Internet saturation and technological sophistication than the general population (Kaplowitz et al., 2004). Moreover, students at many campuses have designated institutional email addresses that enable random sampling or census delivery of Web surveys that is not possible in many general population studies. However, another

element of the technological environment to consider is the increasing use of mobile devices on which increasing numbers check their email and access the Web. Mobile devices differ in their ability to display web pages, for example some devices do not render tables commonly used to present batteries of questions in surveys, others will resize pages to fit the devices screen so that some text is too small to be readable, and others display responses options that are designed to be viewed horizontally as vertical (Callegero, 2010). Since most surveys are incompatible with these devices, successful response to Web surveys may depend on the particulars of how students with mobile devices manage their email (Callegero, 2010).

In many ways, good design features of Web surveys have been found to be similar to good design features of other modes. The empirical literature has established that multiple contacts are necessary to maximize response rates to Web surveys (Cooke et al., 2000; Schaefer & Dillman, 1998). Studies with college students suggest that personalized correspondence (Heerwegh, 2005) and incentives (Laguilles et al., 2011) can also boost response rates.

The question of sponsorship effects is more complex in these organizational surveys than in surveys of the general population. Porter and Whitcomb (2003a) conceptualized of sponsorship at the department level of a college in their experiment, indicating that the survey sponsor was either the admissions office or the office of institutional research. However, it is unclear if college students consider the survey sponsor to be at department level, the college or university level, or if this conceptualization is context dependent.

At the individual level, college students differ from the general population in terms of age level of education, and occupation, so many studies examining respondent demographics from the public opinion literature have limited applicability. In surveys of college students, women are more likely to be respondents than men (Dey, 1997; Porter & Umbach, 2006; Porter & Whitcomb, 2005a), similar to surveys of the general population (Groves et al., 2009). Porter and Whitcomb's (2005a) work suggests that personality type, financial aid status, and social engagement are also important factors related to survey response. We have no reason to suspect that topic is not an important factor in surveys of college students, just as it is in surveys of the general population (Groves et al., 2004; 2006).

The social context of organizational surveys of college students is remarkably different from general population surveys. Porter and Umbach (2006) found that urbanicity, density, computer saturation, and whether an institution was public or private be predictors of response. Although not studied directly in the empirical literature, it seems likely that campus culture may play a role in survey response. As applied to college students, what seems to be missing from the public opinion conception of survey response are factors regarding the relationship between the survey sponsor and the individual.

Section 6: Organizational Research

This section discusses an organizational research methods perspective on survey response, which I will argue is an appropriate lens for thinking about surveys of college students. One branch of organizational research methods focuses on customers, employees, and other voluntary members of organizations, including college students.

Organizational research most often seeks to understand elements particular to the workplace, for example employee satisfaction and organizational commitment (Hinkin & Holtom, 2009).

Typically**,** when higher education researchers have examined nonresponse they have drawn from the general population survey research literature, (e.g. Adams & Gale, 1982; Hesseldenz, 1976; Hutchison, Tollefson, & Wiginton, 1987; Nielsen, Moos & Lee, 1978; Pike 2008; Porter & Umbach, 2006; Porter & Whitcomb, 2005a; Powers & Alderman, 1982; Sax et al., 2003; Smith & Bers, 1987). In contrast to some earlier, atheoretical studies, (e.g. Adams & Gale, 1982; Hesseldenz, 1976; Neilsen et al. 1978), several recent higher education studies ground their work by using or referencing social exchange theory or leverage salience theory Pike, 2008; Porter & Umbach, 2006; Porter & Whitcomb, 2005a). Given that social exchange theory and leverage salience theory are very general frameworks, application to a college student population, though not inappropriate, may under-specify the most important constructs related to nonresponse. A model of survey compliance for college student surveys that could identify factors relevant to the survey response process for this specific population rather than a broad approach needed for general population surveys would be of greater utility to higher education researchers.

Obviously, there are differences between the characteristics of employees and college students, but similarities also exist that warrant an examination of how this area of study may be employed to higher education research on college students. For example, like employees, college students have a relationship with their institution prior to receiving a request to participate in a survey and are more likely to have strong attitudes

and opinions about the survey sponsor than do potential respondents in general population surveys. These attitudes may range from general like or dislike of the institution or sub-unit of the institution to specific attitudes about the institution's use of survey data in decision-making, practice in honoring confidentiality, and norms of cooperation. Moreover, several organizational research studies (e.g. Barr, et al., 2008; Rogelberg et al., 2003; Rogelberg, Spitzmuller, Little, & Reeve, 2006; Spitzmuller, Glenn, Barr, Rogelberg, & Daniel, 2006; Spitzmuller, Glenn, Sutton, Barr, & Rogelberg, 2007) have conducted research with college student participants as proxies for employees, rendering these studies even more appropriate for this purpose. The next sections provide a brief description of how nonresponse has been conceptualized by Rogelberg, Spitzmuller, and their colleagues (Barr et al., 2008; Rogelberg, 2006; Rogelberg, Fisher, Maynard, Hakel, & Horvath, 2001; Rogelberg, & Luong, 1998; Rogelberg, Luong, Sederburg, & Cristol, 2000; Rogelberg et al., 2003; Rogelberg, et al, 2006; Rogelberg & Stanton, 2007; Spitzmuller et al., 2006; Spitzmuller et al., 2007).

How Organizational Surveys Differ from General Population Surveys

The organizational research methods literature provides a lens not previously used to consider nonresponse to college student surveys. The organizational research methods literature builds on the work of public opinion research methods (see, for example, Barr, Spitzmuller & Stuebing, 2008), but conceptualizes of nonresponse differently than general population survey methodology because of the particular contexts of organizations. In most ways the organizational survey literature treats surveys in similar ways to the public opinion literature. For example, Rogelberg and his colleagues (Rogelberg & Luong, 1998; Rogelberg et al., 2000) developed a typology of survey

nonresponse classification that has several similarities to that of public opinion researchers: (a) those who never received the survey request; (b) those who were unable to complete the survey, (c) those who "misplace or forget the survey out of carelessness," (Rogelberg et al., 2000, p. 284), and (d) those who decide not to respond to the survey.

Rogelberg and Stanton (2007) argued that there are important differences between organizational surveys and "political polling/consumer survey types" (p. 203). Such surveys would include election polls, market research studies, and the General Social Survey. In discussing organizational context, Rogelberg and Stanton noted three elements that differentiate organizational surveys from these other surveys that are conducted of the general population. First, respondents to organizational surveys often have a "close connection" (p. 203) to the survey sponsor, whereas most potential respondents contacted by the Gallup Poll, for example, would have no existing relationship. Second, many respondents to organizational surveys likely have existing beliefs about past organizational surveys. For example, employees (or students) may believe that management (or administration) acted on the results of a previous survey, disposing potential respondents to complete or not complete the current survey. Third, respondents may feel greater distrust in completing an organizational survey than a public opinion survey, due to the belief that there may be negative ramifications for their responses if they were to be identified.

These three characteristics would be similar in surveys of college students. Of course, the relationship between the colleges and students may be more complicated than that of employers and employees. Unlike employment relationships, college students pay to be members of an educational enterprise, are obligated by their membership to engage

in activities. As Saunders (2011) has pointed out, students' relationships with their institutions are much more complex than that of customer and provider given the asymmetry of knowledge, admissions requirements, and financial subsidies that characterize most college educations. Like employees, college students are obligated to perform certain tasks if they wish to remain organizational members (e.g. register for classes, abide by a code of conduct, maintain a certain grade point average). Like customers, they expect certain things in return (e.g. housing, meals, a safe environment, access to education). However, much of the college student experience is typified by non-required opportunities.

It is important to note that social exchange theory and leverage salience are not inconsistent with organizational perspectives on survey response. For example, Dillman et al. (2009) discuss the effect of survey sponsor in a respondent's decision to participate in a survey. Similarly, leverage salience theory would conceive of various aspects of the organizational context as affecting a potential respondent's perception of benefits or costs of survey completion. The difference between these theories and the organizational perspective articulated by Rogelberg and his colleagues (e.g. Rogelberg et al., 2000), is in the emphasis on the relationship between the organization and the potential respondent. Whereas Dillman et al. (2009) see sponsorship as one salient aspect among many, organizational researchers see this context as paramount in the survey decision process.

Empirical Studies

Organizational Citizenship Behavior (OCB) is an idea that undergirds several organizational research studies on nonresponse bias. OCB encompasses employee actions that are not required by their job but that benefit the organization. Organ (1988) defined

Organizational Citizenship Behavior (OCB) as actions that are, "discretionary, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization" (p. 4). Rogelberg, Spitzmuller and colleagues (e.g. Spitzmuller et al., 2006; Spitzmuller et al., 2007) conceived of employee survey response as an organizational citizenship behavior, with different studies operationalizing various elements of this larger construct.

Rogelberg et al. (2000) hypothesized that employees' job satisfaction and organizational commitment, intentions to quit, and beliefs about how the organization would use survey data would be related to whether or not they responded to the survey. In a one-on-one interview, participants, who were selected through convenience sampling, were asked to think about their work situation and were given a packet containing a survey. After reviewing the survey materials, participants were asked whether they would complete such a survey request and were asked to complete a questionnaire about their job satisfaction and past survey behaviors. Respondents who indicated that they would not complete the survey (16% of participants, n=30) were more likely to report intentions to quit their job, less likely to be committed to their organization, and had lower levels of satisfaction with their work, jobs in general, supervisors, and how their organization handled survey data. These participants who indicated that they would not comply with the survey request were demographically similar to those who reported that they would comply.

Rogelberg et al. (2000) suggested a framework for studying survey compliance related to organizational citizenship behavior, similar to a reasoned action model. These researchers suggested that eight factors (individual traits, attitudes toward surveys,

specific survey impressions, beliefs about survey use, reciprocity and exchange, organizational commitment, available time, and organizational survey and OCB norms) would affect an individual's intention to complete a survey. For those individuals who formed an intention to comply, actual compliance would be affected by situational constraints, for example misplacing a survey.

Rogelberg et al. (2003) conducted a study of nonresponse employing a "population profiling technique" (discussed in Section 4 above) with a sample of 405 undergraduate students who were surveyed in the classroom. Rogelberg et al. (2003) articulated a series of hypotheses related to types of nonresponse and organizational attitudes. These researchers believed that passive nonrespondents – those students who express an intention of completing a survey but who forget, misplace the survey or otherwise fail to complete it – are similar to respondents, and that active nonrespondents -- students who express the intention not to complete a survey -- would be different from both respondents and passive nonrespondents. Rogelberg et al. (2003) hypothesized that active nonrespondents would be less satisfied with the university, less conscientious and less agreeable than respondents; that passive nonrespondents would be less conscientious than respondents but would be similar to respondents in satisfaction with the university and their intentions to leave the institution. Given the hypothesized similarities and differences among these three groups, Rogelberg et al. (2003) expected the survey would produce estimates of satisfaction with the university that would be generalizable, but that estimates of agreeableness and conscientiousness would be biased.

Researchers administered an initial questionnaire to the captive audiences of students that included measures of agreeableness, conscientiousness, satisfaction with the

university, intentions to leave the university and intentions to complete a subsequent survey. Three weeks later, respondents were sent a mail survey on technology or satisfaction with university administration. Six weeks after the initial survey, students who had originally received the technology survey received the administration satisfaction survey and vice versa. The overall response rate to the first follow-up survey was 21% (n=82), with 66% (n=264) of the sample being passive nonrespondents, and 13% (n=53) being active nonrespondents. The second wave of surveys resulted in a final disposition of 17% (n=68) respondents, 67% (272) passive nonrespondents, and 15% (n=60) active nonrespondents. Rogelberg et al. (2003) reported that these response rates were typical at this institution.

As they expected, Rogelberg et al. (2003) found that active nonrespondents were less satisfied with the University and were less conscientious than were respondents. Results from one wave of the subsequent surveys found that active nonrespondents were less agreeable and were more likely to express intentions to leave the institution than respondents. Also, as expected, passive nonrespondents did not differ from respondents in satisfaction or intentions to leave the university. Due to the similarity of passive nonrespondents to respondents and the small number of active nonrespondents, satisfaction estimates from the follow up surveys provided unbiased estimates of satisfaction in the population. However, measures of conscientiousness and agreeableness from the follow-up surveys were not generalizable to the population because passive nonrespondents differed from respondents on these measures. Rogelberg et al. (2003) concluded that improving response rates results in “picking up passive nonrespondents, which, for attitude purposes, are not the nonrespondents affecting bias” (p. 1113). After

describing several other empirical studies, I will address this conclusion in the critique of the organizational survey literature.

Rogelberg et al. (2006) employed a similar study examining response behaviors of a university sample to an online survey about campus parking, testing a modification of the framework suggested by Rogelberg et al., (2001). Several dimensions were added to the original framework including perceptions of computer/Internet resources, technology attitudes and confidence. Rogelberg et al. (2006) collected data from a captive population of students and then sent a subsequent survey about campus parking (response rate = 19%, n=75). Logistic regression analysis found that attitudes toward surveys in general, a composite measure of technology resources and favorability toward technology, and satisfaction with parking related to the intention to complete a survey and actual survey completion. No odds ratios were reported in this study. Conscientiousness, agreeableness, satisfaction with the university, perceptions of how the university used data in the past, and intentions to leave the university were not related to survey response. There are several important findings from this study. First, the fact that students with favorable views towards surveys were more likely to complete the follow-up survey suggests systematic bias consistent with Goyder (1986). Second, it appears that the survey topic had an effect with students who were satisfied with parking being more likely to complete the survey. Rogelberg et al. (2006) interpreted the fact that perceptions of how the institutions had previously used data was not related to completion to mean that these previous organizational survey experiences were not important for predicting response. However, it is possible that in a special topics survey, students' attitudes toward

the campus sub-unit, in this case parking services, are more salient than their attitudes about the institution as a whole.

Spitzmuller et al. (2006) examined the relationship between several concepts related to organizational citizenship behavior and survey nonresponse. These researchers hypothesized that individuals' perceptions of procedural justice within their organization, organizational support, social exchange with their organization, and wariness of reciprocation would differ between active nonrespondents and respondents and passive nonrespondents. These concepts are various attitudes that relate to OCB. For example, procedural justice is a concept related to the idea that decision-making processes are fair in an organization. Reciprocation wariness taps into the idea that individuals feel exploited in their relationship with the organization. Spitzmuller et al. reasoned "organizational members who feel their organization's decision-making processes are unfair may view noncompliance with requests to participate in organizational surveys as a means of 'paying back'" (p. 22).

Like other elements of organizational behavior these concepts have been developed to understand employees, but they are applicable to college students. In fact, Spitzmuller et al., (2006) tested their hypotheses using a college student sample. A captive group of university students in two business classes were surveyed about their OCB and intentions to complete a future survey. Later the office of institutional research at this institution asked all participants to complete a survey about dining and shopping on and near campus. The composition of the final sample was as follows: 11% (n=69) reported that they would complete a future survey and completed the survey (respondents), 75% (n=464) reported that they would complete a future survey and failed

to do so (passive nonrespondents), and 14% (n=89) reported that they would not complete a future survey and did not complete the subsequent survey (active nonrespondents).

Active nonrespondents perceived the institution to be lower in procedural justice, organizational support, social exchange relationships, and reciprocation wariness. In absolute values, effect sizes, as measured by Cohen's *d*, ranged from .29 to .74. For example, active nonrespondents reported lower perceived procedural justice (M=2.81) than respondents (M=3.33, d = -.64) and passive nonrespondents (M=3.19, d = -.50). These findings suggest that organizational context does affect survey response. These aspects of organizational culture are not operationalized in Porter and Umbach's (2006) study of NSSE response rates. Perhaps these measures would improve prediction of institutional response rates in that study type of study.

Using the same sample discussed above (Spitzmuller et al., 2006), Spitzmuller and her colleagues (Spitzmuller et al., 2007) conducted two studies designed to test whether Organizational Citizenship Behavior was an appropriate theoretical framework for studying nonresponse in organizational surveys, whether organizational surveys are plagued by nonresponse bias by failing to include members who do not engage in OCB, and the aspects of OCB to which nonresponse relates. Spitzmuller and her colleagues examined four dimensions of OCB: altruism, conscientiousness, courtesy and civic virtue. Nonrespondents scored lower on OCB dimensions of altruism, civic virtue and courtesy (but not conscientiousness) compared to passive nonrespondents and respondents. Spitzmuller et al. concluded that organizational surveys are likely to under-represent "those who are disengaged or unwilling to contribute to the resolution of

[organizational] problems" (p. 457). Another consequence of nonresponse bias of those with lower OCB scores was in restricting the range of other measures.

Barr, Spitzmuller, and Stuebing (2008) examined the relationship between three aspects of stress and survey response behavior, using the participant profiling approach previously employed by Rogelberg et al. (2003) and Spitzmuller et al. (2006). Captive audiences of students in a two-year nursing program were asked to complete a survey that contained items relating to overload (quantity of work and time demands), role ambiguity (lack of clear understanding of responsibilities), and role conflict (e.g. incompatible demands from different people), along with an item asking if they would complete a future survey. Of 328 students who were asked to complete the survey, 277 did so (85% response rate) (90% female, average 26 hours a week work in hospital). About one-fourth (n=74) of the students who completed the first survey responded to the second survey. Nonrespondents were coded as active nonrespondents (10%, n=28) or passive nonrespondents (63%, n=175) based on whether they indicated that they would or would not complete a future survey. Barr et al. found that students who reported experiencing greater levels of overload were more likely to be nonrespondents. Barr et al. suggested that people who experience higher levels of overload may lack the time to complete surveys, or may "resent the organization for their high workload" (p. 239).

Critique of Organizational Research Studies on Survey Nonresponse

While offering some important insights into survey nonresponse, this body of organizational research has several weaknesses. Studies employing the population profiling technique have conceptual and methodological problems. First, the artificiality of population profiling is problematic. In this approach, students complete the baseline

survey in class in which they are asked the likelihood that they will complete a future survey, and then are sent such a survey (Barr et al., 2008; Rogelberg et al., 2003; Rogelberg et al., 2006; Spitzmuller et al., 2006; Spitzmuller et al., 2007). It seems likely that at least some participants will perceive they are being manipulated and opt not to respond to the follow-up survey due to their participation in the baseline survey.

Second, these studies have been conducted with convenience samples of students rather than random samples. Although these organizational research studies are strong in terms of internal validity by ensuring close to a one hundred percent response rate to the initial surveys, they are limited by differences that may exist between the students who take the courses in which the initial surveys are conducted (e.g. business students (Spitzmuller, et al., 2006)) and the general population of students at the institution.

Third, the response rates to the follow-up surveys in these studies were quite low (27% (Barr et al., 2008), 21% (Rogelberg et al., 2003), 19% (Rogelberg et al., 2006), and 11% (Spitzmuller et al., 2006; Spitzmuller et al., 2007)). The procedures section of each article indicates that one follow-up survey was sent to the initial captive participants and no mention is made of multiple contacts. Given the low response rates and the deviation from standard survey practices administration practices (Dillman, 2000), it seems likely that the distribution of active nonrespondents, passive nonrespondents, and respondents may be quite different for the participants in these studies than for typical surveys of college students. In other words, follow-up surveys may result in responses from the passive nonrespondents who are most similar to respondents.

Fourth, these researchers claim that because passive nonrespondents are similar to respondents we have little to worry about this population. Unfortunately, passive

nonrespondents may have failed to complete a follow-up surveys due to factors related to variables of interest for many higher education surveys. For example, a college may conduct a survey to examine student engagement, retention, or academic behaviors. From an organizational research perspective, procrastination, lack of confidence or comfort with technology, and forgetfulness are reasons for passive nonresponse. Whereas organizational researchers may not care about nonresponse of this nature (Rogelberg et al., 2003), these characteristics are likely correlated with engagement, academic performance, and retention, the variables in which higher education researchers may be most interested. Furthermore, the concept of passive nonresponse is likely to never be properly operationalized. Reports of intending to complete a later survey may be influenced by social desirability – some apparently passive nonrespondents likely never intended to complete a survey in the first place. This is consistent with some interpretations of nonresponse follow-up data. Although some researchers have taken reports of having forgotten to complete a survey or misplacing a survey at face value, others (e.g. Carifio, Biron, & Shwedel, 1991) have argued that social desirability is likely driving some of these responses.

Summary of Organizational Nonresponse Findings

Given the limitations described above, organizational research findings should be considered with caution. That being said, the organizational nonresponse literature does offer several important insights into surveys of college students. Most important are the findings that attitudes and experiences with the survey sponsor relate to survey response (Barr et al., 2008; Spitzmuller et al., 2006; 2007). In addition, this literature supports the idea that general survey enjoyment and survey topic (e.g. Rogelberg et al., 2006) are

import factors relating to survey response. For higher education researchers, Barr et al.'s finding that work overload is related to nonresponse suggests that surveys of college students may systematically under-represent the most overwhelmed individuals. Furthermore, Spitzmuller et al.'s (2007) finding that disengaged students were less likely to respond than engaged students has implications for many college student surveys, for example NSSE. Engagement measures are central to some researcher's conceptions of good educational practices and behaviors. If students who are disengaged disproportionately fail to respond to survey requests, results from surveys like the NSSE may be highly biased. This has particularly problematic implications for comparisons across institutions that may have different percentages of disengaged students in their population. Despite numerous limitations, the organizational research literature provides a seemingly appropriate way to view college student surveys. In the next section, I argue that nearly all college student surveys can be viewed through an organizational lens.

College Students as Organizational Members

College students are members of college and university populations due to voluntary organizational membership. Although the organizational research literature seems to be a natural fit for surveys of college students, the application of this perspective has not been utilized in higher education researchers' conceptions of nonresponse. Of course, there are differences between college students and employees. To apply an organizational survey perspective to any given survey of college students it is necessary to believe that college students should be considered organizational members and that the request for participation evokes a response based, at least in part, on students' organizational membership.

Students are voluntary members of their institutions, just as employees are voluntary members of their organization. By definition, students have a close connection to their college or university, especially as compared to the connection between most survey sponsors and respondents in general population surveys. Compared to participants in general population surveys, students likely have greater geographical proximity and personal familiarity with the office conducting a given survey, the individual who requests student participation (e.g. the email invitation to the NSSE survey on a particular campus may be sent under the president's signature) or even the survey researchers themselves. By virtue of organizational proximity, these requests differ from survey requests to the general population, for example a telephone survey from the Gallup Poll.

The organizational research literature reviewed here suggests that organizational survey response is attenuated by potential respondents' attitudes, experiences, and relationship with the organization. If we consider the survey response of college students to be similar to that of other organizational members, higher education researchers may be assuming too great a similarity between survey respondents at different institutions. If institutional context and relationship are fundamentally important elements of the survey response process, it stands to reason that ignoring the ways in which students at different colleges and universities experience and perceive their institution will lead to a misunderstanding of nonresponse bias. For example, students at one university may feel, in general, that they are treated with respect and that the operation of the institution occurs with little burden to the student, a potential manifestation of procedural justice studied by Spitzmuller et al. (2006). At another college, students might feel like they are "numbers" in a large bureaucracy. Like employees, students can develop beliefs about

how their organization uses or does not use survey data to make decisions, for example if student surveys are cited or disregarded when new policies are created. Furthermore, students, like employees, may be wary about reporting illicit or undesirable behaviors because of privacy concerns. Overall, many surveys of college students seem closer to organizational surveys of employees than to general population surveys.

"National" Studies as Composites of Individual Organizational Studies

In defining what constitutes an organizational survey, it may not be contentious to classify a "homegrown" survey about campus services as an organizational survey. In addition to the number of local surveys used solely to inform policy at individual campuses, it makes sense to consider a number of ostensibly "national" surveys as organizational surveys when considered at the individual institution level, and a composite of organizational surveys when considered as a whole. Two major surveys of college students, NSSE and the CIRP survey of incoming students, are represented to respondents primarily as tools for their institutions to improve policy and practice. For example, the Web site for the National Survey of Student Engagement explains the survey as follows: "Institutions use their data to identify aspects of the undergraduate experience inside and outside the classroom that can be improved through changes in policies and practices more consistent with good practices in undergraduate education." (National Survey of Student Engagement, n.d., Paragraph 6). The idea that NSSE surveys should be viewed as organizational surveys is bolstered by the specific recommendations offered for data collection. For example, NSSE suggests that institutions use an email subject line such as, "[Institution X] wants your feedback!" (Santucci & Hardy, n.d.). Furthermore, NSSE's sample invitations begin by emphasizing

that the survey is primarily for the benefit of the student's institution. "[Institution X] is interested in learning about your educational activities and what you are getting from your campus experiences. Completing the National Survey of Student Engagement will help [Institution X] improve the education it offers" (Santucci & Hardy, n.d.).

Similarly, the Higher Education Research Institute, which conducts the CIRP survey of incoming students, provided the following suggestion for the first paragraph of the survey invitation for the 2010 administration:

> Your college is participating in a national study about incoming college students. Conducted by the Higher Education Research Institute (HERI) at UCLA, this survey asks your opinion on many items relevant to examining the impact of college. Your school receives very important information about your class from this survey, and we hope you will take the time to complete it. (Pryor, 2010, paragraph 1)

Although these communications include text specifying that the study is part of a national project, this information is de-emphasized compared to the message that survey results will be used by respondents' institutions. The information provided to students explains these survey efforts as designed for local efforts first and foremost. Whether students view these surveys as national studies, organizational surveys, or both, is an empirical question that is part of this proposed dissertation.

Summary of Literature Review

It has been clearly established that response rates have declined in surveys of college students (e.g. Dey, 1997) as well as in general population surveys in the United States and worldwide (Curtin, Presser and Singer, 2005; de Leeuw & Hox, 2002; Singer

2006). Recent examination of nonresponse bias sparked by these declines have led to the findings that nonresponse does indeed produce nonresponse bias in many surveys, but that higher response rates do not necessarily result in lower levels of response bias (Groves, 2006; Groves & Peytcheva, 2008; Peytcheva & Groves, 2009). Groves (2006) has argued that survey researchers should thoughtfully seek to raise response rates in ways in ways that draw less represented segments of the sample into the survey, and that researchers collect auxiliary information about their target population in order to adopt appropriate post-survey weighting adjustments. As discussed in Section 4, if nonresponse bias is a problem when the causes of nonresponse are related to items in the survey or caused by the survey (Groves, 2006), it is important to consider why nonresponse occurs for a given survey, rather than to simply seek to maximize a survey's response rate.

The general survey literature provides a number of specific factors relating to survey response (e.g. Groves & Couper, 1998; Groves et al., 2009), but the higher education research literature has much less information about the factors particular to college student nonresponse. The potential problem of nonresponse bias in surveys of college students has been discussed in the higher education literature for nearly forty years (e.g. Adams, & Gale, 1982; Fuqua, Hartman, & Brown, 1982; Hesseldenz, 1976; Horowitz & Sedlacek, 1974; Hutchison, Tollefson, & Wigington, 1987; Nielsen, Moss, & Lee, 1978; Powers & Alderman, 1982). However, the depth and breadth of this literature is scant, and further research is needed. In particular, more research on the person level characteristics related to nonresponse in college students seems warranted.

The theoretical lenses of leverage salience theory (Groves et al., 2000) or social exchange theory (Dillman, 2007) are not inappropriate for college student surveys, but

they may lack the specificity to be truly helpful in helping researchers to understand survey nonresponse in this population. At present, we have limited understanding of how students view the survey response process, and have little basis for building such a model. Porter and Whitcomb (2005a) argued, “Only when we more fully understand the attitudes that dissuade students from participating in surveys, can we make targeted efforts to combat these drivers of survey non-response” (p. 145).

Most importantly, the relationship between a student and his or her institution suggests the appropriateness of an organizational perspective on survey response. A more specified model that acknowledges the distinctive qualities of college students being asked to participate in surveys to improve their institutions seems warranted. One potential source of direction for such a model is the organizational research literature, which focuses on survey nonresponse in contexts in which the potential respondent has a pre-existing relationship with the organization and the survey is being conducted to inform the work of that organization (e.g. Rogelberg & Stanton, 2007). Given the uncertainty about response to college student surveys, this proposed dissertation seeks to illuminate this phenomenon by exploring three facets of survey response: (a) “Who responds, and who does not respond to college student surveys?” (b) “How do college students experience surveys from their institution?” and (c) “Should we treat surveys of college students as organizational surveys?”

CHAPTER 3
REPLICATION STUDY

Introduction

This is the first of three chapters that each presents one of the three studies that comprise the empirical work of this dissertation. This chapter describes the secondary data analysis that examines student characteristics associated with survey response. Chapter 4 describes the survey on surveys study that investigates how students experience the survey climate by inquiring about the number of surveys they are asked to complete and their motivations for completing surveys. Chapter 5 discusses the focus group study, which, like the survey on surveys study, was conducted to understand how students experience the survey climate. Furthermore, the focus group study explored whether or not college student surveys should be considered organizational surveys. Each chapter reports the methods, results, limitations, and offers discussion of the findings.

Appendix A provides a guide describing how each study relates to the three research questions. I attempt to answer the first research question, "Who responds and who does not respond to student surveys?" through the secondary data analysis, and use the survey on surveys and focus groups as secondary data sources. I address the second research question, "How do students experience the survey process?" through the survey on surveys and focus groups. I explore the third research question, "Should college student surveys be considered organizational surveys?" through the focus group study. Chapter 6 provides the synthesis of these studies as they relate to each research question.

As mentioned in Chapter 1, data for this dissertation were collected at two institutions. Data for the secondary data analysis discussed in this chapter come from a

small, elite, liberal arts college located in the northeastern United States. The survey on surveys study discussed in Chapter 4 was conducted at a large, public, research university located in the northeastern United States. I conducted two focus groups at each of these institutions, which I discuss in Chapter 5. It is important to note several differences in these two institutions besides institutional type. As shown in Table 3.1, the college enrolled fewer than two thousand undergraduates, whereas the university enrolled more than ten times as many students. The college had much greater racial/ethnic diversity than the university and smaller average class sizes. In addition, response rates to recent surveys were higher at the college than at the university.

Design and Research Questions

This secondary data analysis seeks to answer the research question, "Who responds and who does not respond to college students surveys?" by examining individual level factors that may influence survey response (e.g. demographics, academic performance, and engagement). At present, few studies have examined predictors of college student nonresponse beyond student demographics. Without having a better understanding of how student characteristics may relate to nonresponse, it is difficult to speculate about potential nonresponse bias in student surveys.

To this end, I conducted a partial replication of Porter and Whitcomb's (2005a) analysis of nonresponse in student surveys. As discussed in Chapter, 2 Porter and Whitcomb employed a combination of record-linking and panel approaches to examine nonresponse to surveys at a selective liberal arts college. These researchers linked student database demographic data, academic information, and past survey behavior with engagement and personality measures from the CIRP survey of incoming students. Porter

and Whitcomb conducted a series of logistic regression analyses to determine the characteristics related to students' participation in four surveys that were conducted during a single academic year. In logistic regression models that contained demographic, academic, and past survey behavior as independent variables, students' gender, financial aid status and grade point average were predictors of survey response. When personality and engagement variables were added to the logistic regression model, gender, social engagement, financial aid status and personality types were associated with survey response.

I consider this secondary data analysis to be a "partial replication," rather than a "replication" of Porter and Whitcomb's (2005a) study for three reasons. First, the data for the secondary analysis come from a single cohort of students rather than students from multiple class years. Second, Porter and Whitcomb's (2005a) panel study had a 91% response rate, whereas this secondary data analysis has full panel data for 75% of the original cohort. Third, rather than examining survey participation or non-participation across four surveys as Porter and Whitcomb did, this study employs a single survey request to a "survey of sophomores." Because Porter and Whitcomb had a series of ordinal dependent variables (response to zero to four surveys) they employed multinomial logistic regression, whereas the replication study has a dichotomous dependent variable (whether or not a student responded to the follow-up survey) making binary logistic regression the appropriate statistical technique. I discuss the implications of these differences in the limitations section.

The secondary data analysis uses data from a single cohort of entering students at an elite, private liberal arts college in the Northeast. Previously, records from a college's

database had been linked to data from a pre-college Web survey (CIRP) and a follow-up Web survey, conducted during students' fourth semester. I employed a series of four statistical models to identify the characteristics that increase and decrease the odds that a student will complete a survey. Using a multivariate logistic regression model allows for the control of each characteristic. For example, we can look at how gender affects the odds of survey completion while holding other demographics and personality characteristics constant.

The next sections detail the methods for this study, addressing participants and data sources, dependent and independent variables, the treatment of missing data, data analysis, and inter-item correlations of independent variables. Following the methods, I report the classification tables and the study's predictors of survey completion in the four logistic regression models, provide context for interpreting the logistic regression coefficients, and discuss how the predictors in the final model affect the odds that students would complete a follow-up survey. The remaining sections acknowledge the limitations of the study and provide a further discussion of these results. For the remainder of this chapter, I will refer to the Porter and Whitcomb's (2005a) study as "the original study," and my study as "the replication."

Methods

Participants and Data Sources

I extracted data for the replication study from an existing data set from a small, elite, private, liberal arts college in the Northeastern United States. The data set contains demographic data from a student database (record-linking data), student responses to the 2007 CIRP Freshman survey of entering students (panel data), and a follow up survey of

this cohort of students, conducted in spring 2009 (source of the dependent variable). In August 2007, this college participated in the CIRP Freshman survey (hereafter referred to as the CIRP survey) conducted by the Higher Education Research Institute at the University of California. The survey has been conducted since 1966 and was conducted at approximately 700 institutions in 2007 (Higher Education Research Institute, n.d.). Prior to their arrival on campus, all incoming first year students (N=479) were sent email invitations asking them to participate in the Web survey. Two reminder emails were sent to nonrespondents. The first reminder was sent approximately one week after the initial invitation. The second reminder was sent approximately two weeks after the initial invitation. The survey instrument consisted of nine web pages. The first page response rate to the survey was 85%, with 79% of the sample submitting the entire survey. As noted earlier, this response rate is lower than the response rates of 90%-94% reported by Porter and Whitcomb (2005a) and is a limitation of this study.

In spring 2009, all members of the original sample (including original nonrespondents) who were current students (N=459) were sent an invitation to participate in a short survey referred to as a "survey of sophomores." Two follow-up reminders were sent to non-respondents three days and eight days after the original request, resulting in a final response rate of 50% (n=236). These data were successfully matched to CIRP responses for all cases. For the purposes of this study, the only relevant data from the follow-up survey is whether or not a student completed the follow-up survey. The final data set used for the replication study contains administrative data for the population of students who entered in the 2007 cohort and were attending the institution when the

follow-up survey was conducted in spring 2009 (N=459). Of these students, 395 (86%) had responded to the CIRP survey.

Dependent Variable

The dependent variable for the replication study is a dichotomous designation of whether or not a student participated in the follow-up survey conducted in spring of 2009. Approximately one-half of students responded to the follow-up survey (see Table 3.2). Students who had previously responded to the CIRP survey of first year students did not appear to differ from their counterparts in the percentage responding to the follow-up survey. Because these surveys were censuses of the cohort rather than samples, statistical tests are not used to compare response rates between these two groups (Cowger, 1984; 1985).

The dependent variable differs from Porter and Whitcomb's (2005a) study which used an ordinal dependent variable that measured how many of four surveys students completed in one academic year. Conceptually, Porter and Whitcomb attempted to control for survey topic salience by using multiple surveys (on dining services, alcohol and drug use, student engagement behavior, and student satisfaction). In contrast, this study employs a single survey request to participate in a "survey of sophomores." It is possible that a greater topic effect exists in this study than in Porter and Whitcomb's study. However, topic salience should be lessened because the survey topic was very general, rather than focusing on a subject like information technology, dining services, or alcohol. All undergraduates at this institution are full-time students, in theory, further minimizing the potential magnitude of topic effect, as full-time and part-time students may place different importance on their status as a student, or in their status as a

sophomore, potentially resulting in a topic effect correlated with attending full-time or part-time.

Independent Variables

In conducting the replication study, I attempted to employ the same five sets of independent variables used in the original; and composition and coding of all variables corresponds to the original to the extent possible. Table 3.3 describes each independent variable included in the logistic regression equations. The next sections describe the construction of each independent variable and note instances in which the independent variables in the replication study differ from the original.

Demographics

The first set of variables consists of demographic characteristics that are frequently employed in regression analyses of college students (gender, race/ethnicity, whether or not a student is non-resident alien, whether or not a student is on financial aid, and whether or not a student is a first-generation college student (see Table 3.4). These demographic variables were extracted from the institution's student database. Each race/ethnicity variable is uniquely occurring; in other words, a student could not be classified as both Asian and White -- such a student would be classified as multi-racial. Following the original study, I constructed a "race unknown/other" category. I created this variable by combining the institution's codes of Native American, race unknown, and multi-racial. Nonresident alien status is independent of race/ethnicity in this data set.

Financial aid status indicates whether or not a student received any financial aid between fall 2007 and spring 2009. First generation status is coded in the student database during the admissions process based on students' application data. First

generation students at this institution are defined as students who did not have any parents who graduated from a four-year institution and are coded as such in this analysis. Porter and Whitcomb did not define how they defined first generation status, so this measure may differ from that study.

There were no missing data for gender, race/ethnicity (since race unknown is, itself, a variable), or financial aid status. First generation status is a "flag" variable (i.e. a student may be marked as first generation in a data field or else is assumed to not be first generation). Therefore, it is impossible to distinguish missing data from "not first generation."

Academic Performance

The second type of variable is a single measure of students' academic performance through grade point average (GPA). Students' cumulative grade point averages were extracted from the student database at the time they were completing the follow-up survey, so these are students' grade point averages through fall 2008, for most students the end of their third semester. Grade point average at this institution is calculated on a scale ranging from 1 to 14, with distinctions between A+ (14) and A (13). For this study, I converted students' grade point averages to a standard 4.0 scale using the following formula in accordance with this institution's policies: (GPA-1)/3. This calculation has the potential to yield grade point averages ranging from 0 to 4.33. Following this transformation, I rounded all GPAs above 4.00 down to 4.00. This has the effect of suppressing variance at the high end of the scale for a very small number of cases (n=12). There were no missing data for GPA. The original study included class year as set of independent variables (and titled this set of variables "academic background).

Since students in the replication study were from a single entering cohort, there was almost no variance on this measure and this variable was not included in this analysis.

Engagement

The third set of variables consists of proxies that tap into students' levels of pre-college social engagement (e.g. volunteering, participating in political discussions, voting in student elections, participating in student clubs) and studying behavior (e.g. studying with other students) (see Table 3.5). These data were gathered through the CIRP survey of incoming students. I constructed the engagement scales by conducting a principle components analysis on the groups of individual items used for each scale in the original study. The 2007 version of the CIRP survey did not include two of the items on Porter and Whitcomb's (2005a) social engagement scale: "Frequency in high school attended a public recital or concert," and "Frequency in high school: visited an art gallery." No new comparable items were on the 2007 CIRP survey, so the analysis was conducted with two fewer variables on the social engagement scale. Table 3.6 reports alpha reliabilities for each scale and loadings, mean and standard deviation for each scale item.

Personality

The fourth set of variables consists of four Holland personality measures from the CIRP Freshman survey which have been used in previous research on college students (Porter & Whitcomb, 2005a) (see Table 3.7 for alpha reliability coefficients, and loadings, mean, and standard deviation for each item). The four Holland types that have been constructed using CIRP measures are investigative, artistic, social and enterprising personality types. Using principle components analysis, I calculated values on the engagement scales and personality measures by forcing each set of items into a one-

factor solution and using the Anderson-Rubin method to compute scores with a mean of zero and a standard deviation of one, following the scale construction procedures used in the original study. I calculated Alpha reliability coefficients for the resulting scales.

Porter and Whitcomb (2005a) did not disclose whether or not they analyzed the data structure for personality and engagement measures. Originally, I had intended to conduct a confirmatory factor analysis with the engagement and personality scales using principle components analysis to evaluate data structure, and then proceed to compute factor scores. However, initial analyses revealed that these data did not fit with the national scales as constructed by HERI. When I conducted the principle components analysis, only two scales, engagement: studying and investigative personality, were retained as individual factors. The other four measures were rendered as two factor solutions. For several reasons, I decided to use a theoretical justification to construct the scales as they appeared in the original study and national CIRP data sets. First, the data structure for the items comprising the engagement and personality scales was likely different at this institution than in the national data set because of real differences between these students and the population of students who complete the national CIRP survey. I reasoned that the principle components analysis was likely affected by the small numbers of students scoring high (or low) on clusters of items, thereby altering the variance on some items compared to the national dataset. This phenomenon could not be detected by strictly following the empirical results of the principle components analysis.

The following is a hypothetical example of the potential problems of altering scale construction because of seemingly anomalous results from a single institution. Consider the distribution of personality types in the United States as determined by a

common personality measure like the Myers-Briggs test. If we only took Myers-Briggs data from university faculty, the underlying data structure would likely be different than the population as a whole, because, in aggregate, certain characteristics that lead people to choose a faculty career likely differentiate them from the general population. In conducting analyses with these personality data, it could be considered more reasonable to keep the Myers-Briggs classification developed for the United States population generally, rather than to strictly follow empirical results of a statistical analysis, and then construct new personality measures for this population.

Second, for comparative purposes it was important to attempt a replication that was a close as possible to the original study. Porter and Whitcomb (2005a) did not report how, or even if, they conducted a factor analysis of these data, merely that, "These variables are factor scores with a mean of 0 and a standard deviation of 1" (p. 139). Finally, it is important to note that reliability analyses do not show that Chronbach's alpha would be increased if an item were to be deleted from a scale, suggesting that these items hold together as a scale.

Past Survey Behavior

The final three variables are measures of students' past survey behavior. The first is an indicator of whether or not a student took part in the CIRP Freshman survey. This is known for the population of students. The second variable indicates whether or not students had missing data for any of the six CIRP constructs or one individual item that will be used in the final logistic regression model. This is an indicator for students who "completed" the CIRP survey, but who could not be included in the analysis because of these missing data. The last variable is an indicator of students' privacy concerns, which

have been found to be related to survey nonresponse. For the subsample of CIRP participants, a final variable was an indicator of whether or not the student gave HERI permission to release his or her student identification number back to the college.

Missing Data

There were no missing data for the dependent variable or for any of the independent variables (demographics, grade point average, and whether or not a student participated in the CIRP Freshman survey) employed in the first three models. Unfortunately, my analytic plan was complicated by the relatively large number of CIRP participants who had missing data for one of the independent variables of interest (68 of the 395 CIRP participants, or 17.2%). Of these 68 cases, 21 cases had missing data on one of the 39 survey items that were included in one of the two engagement scales or four personality scales. In these cases I used mean replacement to generate a value for missing data so that I could compute a score on each scale. I did not replace missing values if a case had two or more missing value for items that were part of the same scale. In many of these cases, these were one of only a small number of items that students had left blank. None of these 21 cases had more than a single missing value replaced. This left 47 cases in which the student participated in the CIRP survey, but had missing data on a variable of interest. I created a variable indicating that a case had missing data for one of the CIRP measures and included this variable in Model 2. In Model 3 and Model 4 these 47 cases were treated as CIRP non-participants (list-wise deletion), since logistic regression cannot be conducted with missing values.

Data Analysis

Binary logistic regression was the primary statistical analysis conducted in this secondary analysis of data. This technique uses independent variables to classify cases as belonging to one of two potential outcomes (Menard, 2002). Like in ordinary least squares regression, independent variables should be continuous or binary (Pampel, 2000), an assumption met in this analysis. Agresti (2007) recommended that logistic regression analyses have a minimum of ten cases in each dependent variable group for every independent variable in the equation. Model 4 has the largest number of predictors (16) with 160 cases not having responded to the follow-up survey and 188 having responded, thereby meeting Agresti's recommendation.

Following the design of the original study, I planned to conduct four regression analyses. I conducted Model 1 and Model 2 with the entire population of students. Model 1 employed demographic and academic performance as independent variables. Model 2 added whether or not students participated in the CIRP freshman survey, and whether or not a student had missing data on the CIRP survey, as independent variables. The first two models are important because they include data from students who did not complete the CIRP freshman survey, who may regularly fail to respond to surveys. Model 3 and Model 4 were conducted with students who had completed the CIRP Freshman survey. Model 3 contained the same independent variables as Model 1. This analysis is important in order to detect potential differences between CIRP respondents and the population of students before adding measures from the CIRP survey. Model 4 included demographic, academic performance, engagement, personality, and privacy variables. Model 4 is the primary model of interest since it includes measures not typically available for examining

nonresponse, and should provide a more comprehensive view of this phenomenon than an analysis that only includes demographic characteristics.

Inter-Item Correlations

The following section reports the inter-item correlations for the independent variables in the four regression models. High levels of multicollinearity among independent variables can adversely affect interpretation of logistic regression results. Examining inter-item correlations is a good first step to detect potential multicollinearity problems. Since these variables are interval level data, I employed Pearson's correlation coefficients (r). Inter-item correlations for Model 1 and Model 2 (which use the same set of cases) are reported in Table 3.8. I determined that twenty-five correlations were statistically significant at the .05 level for the variables used in these models. Statistically significant correlations ranged from .096 to .272 in effect size. Newton and Rudestam (1999) provide the guidelines that correlations of .10 be considered small and .30 considered to be of a medium effect size. All but three of the correlations were less than 20, indicating that most correlations were small.

As would be expected, each of the five variables measuring race/ethnicity or international student status, were negatively correlated with each other, with a total of ten statistically significant correlations ranging from -.096 to -.168. There were small correlations between receiving financial aid and being a student of color or a nonresident alien. Grade point average was negatively correlated with being a first generation college student (r = -.161), being Hispanic (r = -.172), and being Black (r = -.258), and positively associated with being Asian (r =.121) and being female (r =.100). Being a first

generation college student was positively correlated with being Hispanic (r =.227) and receiving financial aid (r =.272).

Table 3.9 shows the inter-item correlations for the variables used in Model 3 and Model 4. I computed correlations for the database variables for these models because cases in which a student did not complete the CIRP survey have been removed, potentially altering the strength and direction of some of these correlations. Being Black remained negatively correlated with grade point average (r = -.264). Similarly, being Hispanic remained positively correlated with being a first generation college student, however, the correlation decreased to (r =.141). Receiving financial aid remained positively correlated with being a first generation student at the same strength (r =.272). These three correlations are of similar strength to those in Model 1 and Model 2. Several of the correlations among racial/ethnic groups ceased to be statistically significant. This is likely due to the decreased power in this set of analyses since there approximately one hundred fewer cases than in the first set of correlations.

Two of the personality measures were correlated with demographic and academic performance variables. Being female was negatively correlated with having an investigative personality type (r = -.264). Being a non-resident alien was positively correlated with having an enterprising personality type (r =.238). Grade point average was positively correlated with having an investigative personality type (r =.253).

The correlations between some of the personality and engagement measures were much stronger than any of the correlations among demographics or academic performance. The social engagement scale was positively correlated with the artistic personality (r =.238), studying engagement (r =.317), and scoring higher on the social

personality measure (r =.567). This last correlation was the strongest between any independent variables, presenting a potential problem of multicollinearity. The social personality measure was positively correlated with studying engagement (r =.236) and the artistic personality measure (r =.414). The enterprising personality type was correlated with the investigative personality type (r =.369) and the social personality type (r =.300).

Given the high inter-item correlations between the personality and engagement scales, it was particularly important to examine collinearity diagnostics. Allison (1999) suggests that multicollinearity may adversely affect interpretation of regression results if tolerance statistics fall below .40. Table 3.10 provides values for tolerance and variance inflation factor (VIF) measures. The tolerance statistics are not lower than .75 for any variable in the first three models. In Model 4, the lowest tolerance statistic is .506 for the artistic personality type, indicating that multicollinearity should not affect interpretation of the regression results.

Logistic Regression Results

Classification

Table 3.11 provides the classification of cases for the base models and the logistic regression equations. The first set reports results for the models using the full sample of students (Base Model 1 and logistic regression Model 1 and Model 2). The second set of classification tables report results for the subsample of students who completed the CIRP Freshman Survey (Base Model 2 and logistic regression Model 3 and Model 4). The base models show the accuracy of predicting that students will or will not respond to the follow-up survey with no independent variables. This is a starting point based on the

observed distribution of students who completed or did not complete the follow-up survey. Base Model 1 correctly classified about one-half (51.5%) of cases, meaning that 51.5% of cases completed the follow-up survey. Adding the demographic and grade point average variables in Model 1 increased the accuracy of prediction to 64.5%. Adding information about students' past survey behaviors as measured by having missing data on one or more of the seven CIRP survey measures or not participating in the CIRP survey slightly lowered the predictive power of the model. Base Model 2 successfully classified 54.0% of the cases. Including demographics and grade point average increased the percentage of cases correctly classified to 64.9% and adding the personality and engagement measures increased the percentage of cases correctly classified to 66.4%.

Logistic Regression Statistics

Table 3.12 provides the logged odds (B) and exponentiated logged odds (Exp(B)) for the four logistic regression models. This is the primary table presenting logistic regression results. Exponentiated logged odds provide true effect sizes, making it possible to compare the relative effects of one coefficient to another. Because these coefficients are exponents, the researcher must look to the logged odds (B) to determine if a coefficient is positive or negative. Appendix B contains complete tables of logged odds, exponentiated odds, standard error, Wald statistic, and significance level for the variables in each of the four models.

According to Pampel (2000), researchers have not come to consensus with regards to the best measures to report model fit for logistic regression equations. Therefore, I have provided three of the commonly used model fit statistics. The first two, the Cox and Snell pseudo-R square and Nagelkerke Pseudo-R square, range from zero to

one. The closer to the coefficient is to one, the better the model fit. It is important to note that these measures are not the same as R square in linear regression and are not measuring the amount of variance explained in the model. The -2 Log likelihood value is another measure of model fit ranging from zero to positive infinity (Pampel, 2000). The closer the value is to zero, the better the model fit.

Because logistic regression results are not intuitive to interpret, I first report the independent variables that are statistically significant predictors of survey completion in each model, how these predictors change from one model to the next, and how goodness of fit statistics change in each model. After a brief discussion of these findings, I provide an example of how the exponentiated logged odds can be interpreted as odds ratios and describe the magnitude of effect for each independent variable in the final model.

Model Results

The first two models include all students in the sample, whereas the third and fourth models include 2007 CIRP participants only. Model 1 and Model 2 include demographic characteristics, first generation status, financial aid status and grade point average to predict whether or not a student will respond to the survey of sophomores. Consistent with the original study, being female and having a higher grade point average are positive predictors of survey completion in Model 1. Different from Porter and Whitcomb's (2005a) findings, receiving financial aid is also a positive predictor of survey completion in the first model.

Adding the survey participation variables measuring whether a student did not complete the CIRP survey and whether the student had too much missing data on the CIRP survey to be included in the analysis, did not meaningfully change predication of

survey completion, nor did it improve the model fit as indicated by either the Cox and Snell or Nagelkerke pseudo-R Square statistics.. In Model 2, being female, having a higher grade point average and receiving financial aid remain positive predictors of survey completion. Although, the direction of the financial aid predictor remained different in the replication than in the original study, the stability of findings between Model 1 and Model 2 is consistent with the original study

Model 3 replicates the first model, but only for the subsample of students who completed the CIRP survey. The purposes of constructing this model are to ascertain potential biases that may exist due to nonresponse to the CIRP survey and to provide a baseline for Model 4. As shown in Table 3.12, Model 3 results differed slightly from Model 1. Being female and having a higher grade point average remained the strongest predictors of survey completion. However, receiving financial aid ceased to be a significant predictor of survey completion, and being a first-generation student became a negative predictor of survey completion. These findings present potential challenges for interpreting results in Model 4 and will be discussed below.

The final model includes personality and engagement measures. Being female remained a significant predictor, as it did in Porter and Whitcomb's (2005a) study. Like Model 3, being a first generation student continued to be a negative predictor of survey completion. Similar to Porter and Whitcomb's findings, the addition of engagement measures, personality measures, and opting not to provide one's ID number, caused GPA to cease being a significant predictor of survey completion. Being more socially engaged is a positive predictor of survey completion whereas having a more enterprising personality type is a negative predictor of completion. Refusing to provide one's ID

number on the CIRP survey was not a significant predictor. Unlike Porter and Whitcomb's fourth model, investigative and artistic personality types were not significant predictors. The addition of personality and engagement measures increased model fit compared to Model 3. The Nagelkerke pseudo-R square increased to .202 in Model 4 from .142 in Model 3. The percentage change of 42.3% in the Pseudo-R squares between Model 3 and Model 4 mimics that in Porter and Whitcomb's (2005a) study.

Looking across the models, being female was a significant predictor of survey completion in all four models. Having a higher grade point average was predictive of survey completion in the first three models, but was no longer significant in the fourth model when personality and engagement measures were introduced. Like in Porter and Whitcomb's (2005a) study, the social engagement scale and enterprising personality scale were significant predictors of survey completion. The results of this study were quite similar to those in Porter and Whitcomb (2005a) with a few exceptions. First, receiving financial aid in models one and two was a positive predictor of survey completion in this study, whereas it was a negative predictor for the first three models in the original study. Second, being a first generation college student was a negative predictor in Model 3 and Model 4 in the current study, whereas it was not a predictor in the original study. Third, the investigative and artistic personality measures were not predictors of survey completion in this study, whereas in the original study scoring higher on the investigative scale was a positive predictor and scoring higher on the artistic scale was a negative predictor of survey completion.

Interpreting Exponentiated Logged Odds

Before discussing the effect sizes of predictors in the final model, I present an example of how raw data can be converted to odds ratios. This exercise is intended to clarify the meaning of the exponentiated logged odds coefficients, using the gender data prior to logistic regression analyses. Table 3.13 shows that there were 247 women in the original dataset, of whom 155 completed the follow-up survey, resulting in a response rate of 62.8% for women. Of the 212 men in the original data set, 81 completed the follow up survey, resulting in a response rate of 38.2% for men. The response rates for men and women can be converted into odds by dividing the respective response rate by 1-response rate (i.e. resp. rate/1-resp.rate, or .628/.372 for women). This results in odds of 1.688 for women and .618 for men. In other words, for every 169 women (1.688) who complete a survey, 100 do not; and for every 62 men (.618) who complete a survey, 100 do not. These odds can be expressed as a single ratio by dividing the odds that women will complete a follow-up survey (1.688) by the odds that men will complete a survey (.618), resulting in an odds ratio of 2.731. Interpreting the odds ratio reveals that for every 273 women who complete a follow-up survey, 100 men complete a follow-up survey.

The exponentiated logged odds (Exp(B)) for each statistically significant predictor in Table 3.12 can be interpreted as an odds ratio. In Model 4, Exp(B) was 2.675 for women, almost identical to the odds ratio computed above without controlling for other variables. This means that for every 268 women who completed the follow-up survey, 100 men would complete the follow up survey. By subtracting 1 from the Exp(B) of 2.675, the coefficient can be interpreted as meaning that the odds of

completing the follow-up survey were 167.5% higher for women than for men. Odds were 50.7% lower for first generation college students to complete the survey than for students who are not first-generation (Exp(B) = .493). For every 49 first generation students who responded to the survey, 100 non-first generation students responded.

Exponentiated logged odds are interpreted differently for continuous variables than for the dummy variables described above. Subtracting 1 from the Exp(B) value gives the percentage change in odds of survey completion for a one unit change in the independent variable. As mentioned earlier, all the continuous variables were standardized with a mean of zero and a standard deviation of 1, which facilitates interpretation of the exponentiated logged odds. Exp(B) for the social engagement scale was 1.535. A one standard deviation increase on the social engagement scale is associated with a 53.5% increase in the odds of completing the follow-up survey (1.535-1). A one standard deviation increase in the enterprising personality scale (Exp(B) = .666) is associated with a 33.4% decreases the odds of completing the survey.

Limitations

The replication study has several notable limitations. Like Porter and Whitcomb's (2005a) study, it was conducted with data from a single, selective, liberal arts college so the results may not be generalizable to all institutions. As a secondary analysis the study relied on measures constructed for another purpose, and in some instances student characteristics may not be specified to the most desirable extent. Third, the study used participation in a single survey as the dependent variable. It is likely that greater variation will exist with respect to the decision to participate in one survey compared to the decisions to participate in several surveys. Fourth, the overall response rate to the CIRP

survey was 85%, but only 75% of cases had data for all variable, this is lower than the response rates for the panel data used by Porter and Whitcomb (2005a). Although the response rate is high for a college student survey, there is a notable percentage of nonrespondents, and it is difficult to make the case that these are census-like data. Finally, like in all regression analyses, specification error is a potential problem. Logistic regression assumes that all relevant variables have been included in the model. If other important variables related to survey completion have been omitted, the results would be adversely affected.

Discussion

This study set out to examine the individual-level characteristics that predicted whether or not a student would participate in a survey, by conducting a partial replication of Porter and Whitcomb's (2005a) research. Logistic regression results showed that women had higher odds of completing the follow-up survey compared to men, a finding consistent with previous studies on survey participation among college students (Dey, 1997; Hutchison, Tollefson, & Wigington, 1987; Nielsen, Moos, & Lee, 1978; Pike, 2008; Porter & Umbach, 2006; Porter & Whitcomb, 2005a; Woosley, 2005). Controlling for other factors, gender had the single greatest effect on the odds of survey completion. That gender exerted such a strong influence after controlling for personality and engagement is particularly notable, as one might otherwise speculate that some apparent gender differences in survey response are tied to other gendered attributes or behavior such as personality or engagement.

Being a first generation college student was associated with lower odds of completing the follow-up survey in Model 3 and Model 4. It is unclear why this might be

the case, particularly since it was not a statistically significant predictor in Models 1 and 2. One possibility is that first-generation students who are typically survey nonrespondents disproportionately completed the CIRP survey compared to the non-first generation students who typically fail to respond to surveys. Perhaps a greater percentage of first generation students believed the CIRP survey to be required or expected than other students. If this explanation is correct, the apparent effect of first generation status may be the result of nonresponse bias in the panel survey. At this point, such conclusions are purely speculative.

In line with Porter and Whitcomb's (2005a) findings, scoring higher on the social engagement scale was positively associated with increased odds of completing the follow-up survey. A number of the individual items that comprised the social engagement scale relate to having connections with one's institution, for example spending time in student clubs or groups, voting in student elections, and participating in student government. Students who reported engaging in these activities with greater frequency might feel a stronger connection to their institution than their peers. The social exchange theory of survey response specifies that potential respondents must trust the entity who asks them to complete a survey and to perceive a benefit in completing the survey (Dillman et al., 2009). It would make sense that feeling a stronger connection to one's institution would engender greater levels of trust. In addition, these students might be more likely to see their own interests aligned with their institution and be more willing to comply with a request for data. Another subset of the items in the social exchange scale includes discussing politics, discussing religion, and participating in demonstrations. Logically, these items would be associated, at least to some extent, with an interest in

communicating and a willingness to share one's ideas within the institutional context, characteristics that we might expect to be associated with survey participants.

Porter and Whitcomb (2005a) noted surprise that enterprising personalities were associated with lower odds of survey completion because one characteristic of this personality type is extroversion. However, Smart et al. (2006) described enterprising people as avoiding "scientific, intellectual, and abstruse activities" (p. 14). These aspects of enterprising personalities conflict with some potential motivations to complete a survey, for example curiosity in the topic or interest in surveys in general. Moreover, Smart et al. (2006) characterized people with enterprising personality types as manipulating others, and using persuasion to achieve their goals. These methods of interaction do not match well with social exchange theory, which would appear to operate more effectively with people who have social personality types, who tend to be cooperative and helpful, or investigative personality types, who see themselves as valuing the development of knowledge.

Porter and Whitcomb (2005a) argued that GPA may have ceased to be a predictor of survey completion in their final model because of the items asking students to self-rate their academics that are part of the personality scales, hypothesizing that the personality scales absorbed some of the predictive power of GPA. Holland types are associated with particular majors (Smart et al., 2006). To the extent that the distribution students' GPA varies by major, personality types could also be absorbing differences in grading practices by department, for example physics and sociology.

Differences between the original study and the replication may be due to real differences in the student populations or institutional contexts between the two studies.

Porter and Umbach (2006) found that both student and institutional characteristics affected survey response rates. Although the original and replication studies were both conducted at selective, liberal arts colleges, it is possible that differences in other institutional characteristics affected survey response. Organizational researchers (Rogelberg & Stanton, 2007) would suggest that institution-specific contexts like students' perceptions of how their college used data from past surveys, could affect students' decision to participate in a survey. Furthermore, the replication study used as 51% response rate as a dependent variable whereas the original study used surveys with response rates ranging between 39% and 45%. Perhaps, in achieving a higher response rate, the survey captured responses from a slightly more representative pool of students.

Another set of explanations for the differences between the two studies relates to methodological differences. As mentioned earlier, Porter and Whitcomb had panel data for a larger percentage of their population, and they used four surveys to help mitigate potential topic effects. Nonresponse bias in the replication study panel and response bias through topic effect in the dependent variable could account for differences in findings. Additionally, several of the engagement and personality measures were forced into one factor solutions in the replication study. Perhaps these scales are not properly representing the intended underlying constructs. Because the original study does not contain complete methodological information, I cannot fully speculate on some potential methodological effects. For example, Porter and Whitcomb (2005a) do not report an effect size in their results, so it is not possible to ascertain the comparability of the predictive power of each independent variable. Also, Porter and Whitcomb do not provide descriptive statistics for their independent variables, and it may be that

differences in predictors were due to the statistical power of some variable. For example, it is possible that a smaller percentage of first generation students were present in Porter and Whitcomb's study, thereby potentially masking some of the predictive power of that variable.

Despite a less robust measure of survey completion comprising the dependent variable and higher levels of nonresponse to the CIRP survey that provided the panel data for Model 3 and Model 4, this study revealed many findings similar to the original study. This study confirmed Porter and Whitcomb's findings that being female and scoring higher on the social engagement scale were associated with increased odds of survey completion, whereas scoring lower on the enterprising personality scale was associated with lower odds of survey completion. More broadly, this study further supports the idea that personality and engagement can affect survey participation, controlling for demographic and academic characteristics. The replication adds further credence to Porter and Whitcomb's (2005a) caution that, given effects of personality and engagement on the odds of survey completion, nonresponse bias cannot be controlled through demographic weighting. The study further confirmed that powerful relationship between gender and survey completion, suggesting that further attention be devoted to understanding men's decisions to participate in surveys.

CHAPTER 4
SURVEYS ON SURVEYS

Introduction

The "survey on surveys" study attempts to shed light on the research question, "How do students experience the survey process?" To this end, I sought descriptive information about the number of surveys in which students are asked to participate, the number in which they do participate, and the reasons why they decided to complete a particular survey. The following sections first lay out the study's methods, describing research design, respondents' characteristics, measures and data analysis. Following these sections, I describe and discuss the study's results. The two primary strands of analysis examine a) students' reports of being asked to complete surveys and their self-reported response rate and b) students' motivations for participating in a survey. Following the discussion of results, I address the limitations of the study and provide a summary of the most important findings.

Methods

Administration

Nine items asking respondents about their experiences with and attitudes toward surveys were appended to two surveys conducted by a student research and assessment office at a large, public university in the Northeast. These were the final items on two Web surveys asking students to report about their experiences with the institution's dining services. Each survey was sent to a random sample of undergraduate students who were currently on a meal plan, identified through data files supplied by the dining services office. One survey was conducted in spring 2011 and the other in fall 2011.The population of students who had a campus meal plan differed in size between these two

semesters with approximately 11,000 students on a meal plan in the spring, and over 15,000 students on a meal plan in the fall, out of an undergraduate population of approximately 20,000 students.

The surveys were administrated through the SensusWeb survey platform, and employed Secured-Socket Layer encryption. The spring survey was sent to students on April 27th, 2011 with up to three reminders sent to nonrespondents. For the spring survey, all respondents who completed the instrument were entered into a raffle to win an iPad2. The fall survey was sent to students on November 11th, 2011 with up to three reminders to nonrespondents. For the fall survey, all respondents were entered into a lottery to win one of three one hundred dollar gift cards to the University Store. Invitations to participate in the surveys were identical with two exceptions: the difference in incentive offered, and a different estimated time to complete the survey. Invitations to the spring 2011 survey indicated that it would take between four and six minutes to complete compared to six to eight minutes for the fall 2011 survey.

Respondents

The overall response rates were 23.0% (n=575) for the spring survey and 22.9% (n=800) for the fall survey. The response rates for participants who answered any of the survey on survey questions were 21.0% (n=524) for the spring survey and 18.6% (n=650) for the fall survey. Table 4.1 compares respondent demographic characteristics to those of the population for each survey. Women are over-represented compared to men in both surveys, more extensively in the fall. Women comprised 65.0% of fall respondents while constituting 47.8% of the population. Black students appear to be under-represented in both surveys. For example, Black students comprise 4.9% of the population for the spring

survey, but comprise only 2.3% of survey respondents. Because of the small number of Black students in both groups, it is possible that random chance rather than response propensity has caused the difference between the percentage of Black student survey respondents and the Black student population. In the spring survey, honors college students are over-represented compared to their peers who were not students in the honors college (21.2% of respondents compared to 13.1% of the population). Also, in the spring survey, first-year students are slightly under-represented (29.6% of respondents compared to 37.0% of the population), whereas juniors and seniors are slightly over-represented. Respondents to the fall survey appear to be representative of the population in terms of class year and membership in the honors college. Respondents to both surveys appear to be representative of the target population in terms of being a varsity athlete, entering the university as a first-year student or transfer student, or being a member of a fraternity or sorority.

Measures

Survey Items

The first two items asked students to report the number of surveys from the university that had been asked to complete during the current semester. The second item asked students how many of these surveys they had completed. The remaining items asked students to indicate if each of seven reasons was a major reason, a minor reason or not a reason for completing the current survey. Appendix C lists the wording for each item and the response categories. The only difference between the two sets of items was that the last item in each survey was changed to match the incentive offered.

Self-Reported Response Rate

Students' self-reported response rate was calculated by dividing the number of surveys in which students reported having participated by the number of surveys they reported being invited to complete. Students who reported being asked to complete no surveys were coded as missing. I treated reports of "six or more" for either variable as "six" for this calculation, which has the potential effect of artificially inflating response rates. For example, some students who were asked to complete eight surveys may have only completed six surveys, but are being counted as having completed all of the surveys to which they were invited to participate.

Seven respondents to the spring survey and eleven respondents to the fall survey reported participating in more surveys than they had reported being asked to participate. In all but two instances these respondents reported participating in one additional survey. I recoded all eighteen of these cases as participating in the number of surveys to which they received survey requests and to having a 100% response rate. I opted to recode these data, rather than discarding the cases, because it seemed likely that these respondents included the survey they were currently taking when reporting the number of surveys they had completed.

Data Analysis

My original intent was to combine spring and fall data and to run analyses with spring and fall data combined for all analyses. However, several differences between the spring and fall data sets caused me to rethink my analytic strategy. After examining each data set, I discovered that fifty-two students had responded to both the spring and fall

surveys. In addition, respondents to the fall survey reported being asked to participate in fewer surveys than respondents to the spring survey. Furthermore, the spring survey slightly overrepresented first year students and honors college students whereas the fall survey did not, and the fall survey more extremely overrepresented women than did the spring survey. The difference in incentive and the necessity of changing the item regarding incentive, further distinguished the two surveys from one another. Finally, the surveys were launched during different periods in the academic calendar. The spring survey was launched approximately one week (eight days) before the first day of final exams, whereas the fall survey was launched approximately one month (thirty days) before final exams. Ultimately, I reasoned that the differences in overall context, including the timing of administrations in the academic calendar and difference in incentive, could relate to differences in students reports in motivations to participate in the survey, and that differences in time of the semester might lead to differences in students' self-reports of the number of survey requests received. Therefore, I decided to compare fall and spring students' self-reported response rates and number of survey requests received and to analyze motivation data separately for the fall and spring data sets.

I began the analyses by running frequency distributions for each item. I calculated measures of central tendency, and standard deviation for the items asking students to report the number of surveys they had been asked to complete, the number of surveys they completed, and self-reported response rate. I anticipated that these descriptive data would help me understand the survey climate (e.g. did students seem to be bombarded with survey requests?) especially given the notion of college student survey fatigue

discussed in Chapter 2. Next, I conducted a series of bivariate analyses to examine differences between groups on self-reported response rates and motivations to complete surveys. Students' self-reported response rate was extremely positively skewed, with more cases at the end of the scale (100%) than any other point. The item measuring students' reports of the number of survey requests received was negatively skewed in the fall sample. Although independent sample T-tests are appropriate to use with interval level data, these parametric tests assume that the data are normally distributed (Newton & Rudestam, 1999). Therefore, I first employed Mann Whitney U tests, a non-parametric statistic appropriate to use with skewed dependent variables, to compare self-reported response rates and number of surveys students were invited to complete for the spring and fall surveys. Because the spring survey was conducted at the very end of the semester, whereas the fall survey was launched about one month remaining in the semester, I suspected students might report fewer surveys in the fall than spring.

I employed bivariate correlations using Spearman's Rho (ρ) to analyze the relationship between number of survey requests and self-reported response rates. In addition, I ran Kruskal-Wallis Tests with paired comparisons to compare mean differences in self-reported response rates between students who were asked to complete different numbers of surveys, and to compare self-reported response rate by students' class year. The Kruskal-Wallis test is a nonparametric test that allows researchers to compare distributions among more than two groups (Newton and Rudestam, 1999). Consistent with the idea of survey fatigue, I anticipated that students who reported receiving more survey requests would report having responded to a smaller percentage of surveys than students who received fewer requests. Using a similar rationale, the longer

students had attended the university, the larger the total number of survey requests they were likely to have received over time, potentially resulting in stronger feelings of survey burden. Therefore, I expected first year students to report responding to a higher percentage of surveys than seniors.

I ran crosstabulations with the chi-square statistic to examine potential differences between fall and spring respondents in their reports of reasons for completing surveys, and to compare reasons for completion by gender and class year. Given the potential "time of semester" differences, it was important to look at how students might be differently motivated to complete a survey while in the midst of classes or at the very end of the semester. One persistent finding in the literature on college student survey response is that higher percentages of women respond than men (Dey, 1997; Hutchison, Tollefson, & Wigington, 1987; Nielsen, Moos, & Lee, 1978; Pike, 2008; Porter & Umbach, 2006; Porter & Whitcomb, 2005a; Woosley, 2005). Comparing motivations between men and women respondents is important for understanding the potential role of gender in survey response among college students. Additionally, I suspected there may be differences in motivation by class year, since underclassmen, particularly first year students, would have had fewer experiences with being asked to complete surveys by the university. Finally, using Spearman's Rho (ρ), I ran bivariate correlations for the motivation items to examine how particular motivations might be positively or negatively related to one another. The motivation items used three-point ordinal level response scales, making a nonparametric test appropriate for these analyses (Newton & Rudestam, 1999).

The Mann Whitney U and Kruskal-Wallis nonparametric tests are less intuitive to interpret than traditional parametric tests such as T-tests and ANOVAs, because they

evaluate individual mean or median ranks rather than testing group means. For example, comparing fall respondents and spring respondents on self-reported response rate yields a mean rank of 534.01 for spring and 459.91 for fall. To facilitate comprehension of differences between groups, I also conducted independent sample T-tests and one-way ANOVAs with Tukey post-hoc tests on any differences that were found to be statistically significant using the nonparametric statistics. Because I employed nonparametric tests due to skewness in the two dependent variables, rather than due to bipolar distributions or ordinal level data, looking at mean responses can ease comprehension of these data. For each instance in which the parametric test was conducted, there were no differences in determining statistical significance compared to the nonparametric tests. Although I am violating assumptions of normality, I have reported these mean differences, along with the parametric test statistics. In other words, I employed the correct, nonparametric tests to determine of observed difference were statistically significant, then conducted parametric tests on those comparisons I found to be statistically significant and report mean differences to improve interpretation of the results.

I opted to preserve all cases with some values on the survey on survey items and allowed the default SPSS commands to exclude cases with missing data on one or both of the variables in any one bivariate analysis, rather than employing listwise deletion. Because there are no multivariate analyses in this study, I was not forced to decide between mean replacement or other imputation, or listwise deletion, and rather than discarding real data, I decided to preserve all cases that had any values on these items.

Results

Survey Requests

Respondents to the spring survey reported having being asked to complete an average of three other University surveys during the current semester, whereas respondents to the fall survey reported having been asked to complete an average of two surveys during that semester ($p < .001$; $t=10.444$) ($p < .001$, $U= 111{,}630.500$); (see Table 4.2). One explanation for this difference is that the research and assessment office conducted several surveys of undergraduates in spring 2011, but conducted only the dining survey in fall 2011. Another likely reason for this difference is that the spring survey was conducted at the end of the semester, whereas the fall survey was conducted three weeks earlier in the academic calendar. If the fall survey had been conducted at the equivalent point in the semester (i.e. launched within a week of the end of classes), the number of survey requests students reported in each survey might have been identical. Following this assumption and including the dining survey suggests that, by the end of the semester, a typical student might receive an average of about four survey requests. At first glance, these findings do not quite suggest a survey climate that is overly burdensome. However, if students receive an average of four survey requests each semester, they will have been asked to respond to over thirty surveys by the time they graduate. In this context, these students appear to be heavily surveyed.

Self-Reported Response Rates

Surprisingly, the majority of respondents in both surveys reported responding to each survey request they received during the current semester. Four-fifths of spring survey respondents compared to seventy percent of fall respondents reported responding

to all of the surveys they were asked to complete (80.9% vs. 69.4%; $p. < .001$, $t = 5.488$) ($p. < .001$, $U=104, 861$) (see Table 4.3).

There are several potential reasons why respondents reported completing surveys at much higher rates than expected. Any one or a combination of these possibilities may be at play. First, it is possible that the students who completed these surveys are comprised, largely, of "hard-core respondents," students who typically respond to all survey requests. Previous research has not supported the idea that only a small segment of the population regularly participates in survey research. Most conceptions of survey response suggest that there is a small body of persistent nonrespondents (e.g. Rogelberg et al., 2003), and that most people sometimes complete surveys. However, if a relatively small group of "hard-core respondents" is disproportionately participating in surveys, researchers at colleges and universities have a great deal to worry about, since these students are likely to differ from the non-cooperative segment of the population.

Second, psychological factors may have influenced students' reporting. Social desirability may have influenced students to report having completed more surveys than they actually had. Other psychological factors, such as the inclination to report in ways that support a positive self-image may have exerted a similar influence. At the same time, survey participation, or lack thereof, is not likely to evoke strong feelings of guilt or inner turmoil among respondents. Moreover, refusing to participate in surveys at this institution rather than participating is the normative behavior as measured by response rates, suggesting that social desirability may operate to cause under-reporting of survey completion.

Third, it is possible that the two items asking about the number of survey requests received and the number of surveys completed were too cognitively demanding for respondents. Perhaps students were unable to recall the number of survey requests they had received, the number of surveys they completed or both. For example, a student might check his or her mail notice a survey request but, if he or she never responds to the survey, may forget having ever received a request in the first place. Given the potential difficulty of recalling these survey requests, students may have resorted to cognitive shortcuts to estimate the frequency of these occurrences (Conrad, Brown, & Cashman, 1998; Tourengeau et al., 2001). Some of these shortcuts may have included general impressions of one's self. For example, if a student thinks of herself as generally completing surveys, she may have employed a "best guess" technique for the number of surveys requests received, and simply marked the same number for surveys completed. Alternatively, the cognitive demands may caused respondents to satisfice rather than optimize (Krosnick, 1999). Satisficing would result in respondents ceasing to attempt to provide the best answer, and instead employing easiest response to complete the survey.

Fourth, the question wording itself may have been problematic. I do not know if students thought of "surveys of offices or services or about your educational experiences" the way I intended or even if those terms had meaning to students. Furthermore, by providing a definition for surveys students may have excluded some surveys I intended them to count.

Fifth, it is possible that students do not "see" some or many of the survey requests that are intended for them. For example, email invitations may be directed to students' spam folders, they may miss invitations if they seldom check their University email, or

they may be “lost” in their inboxes. For example, university email that is forwarded to another email account may be misidentified as SPAM by the email provider. If this were to be true, students might believe they are replying to most survey requests and simply do not know or remember that they are being asked to complete other surveys.

Self-Reported Response Rates and Number of Requests

Tables 4.4 shows the distribution of students’ response behaviors based on the number of surveys students were asked to complete. A quick look at these crosstabulations suggests that as reports of survey requests increase, self-reported response rates decrease. For example, for the spring survey, nine-tenths of students who reported receiving one survey request indicated that they completed the survey, whereas two-thirds of students who received three requests, one-half of students who received four requests, and one-third of students who received five requests reported completing all of the surveys they were asked to complete. Being asked to complete more surveys was negatively correlated with self-reported response rates for both spring ($\rho = -.290$, $p < .001$) and fall ($\rho = -.236$, $p < .001$) samples.

Self-Reported Response Rates and Demographics

There were no statistically significant differences between men and women’s self-reported response rates in either data set. Additionally, there were no differences in self-reported response rate by class year for the spring survey. However, in the fall data set there were differences in self-reported response rate by class year (H=18.347, p.<.001). Juniors reported a mean response rate of 89.74% (F=6.606), higher than the response rates reported by first year students (75.78%, $p < .001$) and seniors (73.94%, $p = .008$).

It is not surprising that seniors had the lowest self-reported response rate, since they were more likely to have received a larger number of previous survey requests compared to other students. For example, a typical senior may have received four survey requests each semester they had attended the university, resulting in over two dozen requests by the time they are a first semester senior, whereas a first-semester, first-year student would have received many fewer survey invitations. One aspect of Dillman et al's (2009) social exchange theory of survey response is that respondents should feel that the opportunity to respond to a survey is scarce. If students think about these surveys as "university surveys" rather than individual, discrete requests from sub-units of the institution, it would make sense that seniors, having received numerous survey requests, would be less inclined to complete a survey compared to first year students, for whom this would be a relatively new experience.

In addition, many of the seniors would be in their last semester at the university. Therefore, it is doubtful that they could be motivated to complete the survey by the possibility of experiencing changes to dining services that could result from the survey, since they would have graduated before any changes went into effect. The fact that first year students had the second lowest self-reported response rate runs counter to expectations that a relative newness to the university and fewer opportunities to have been asked to complete a survey would result in higher levels of cooperation.

Reasons for Participating in the Current Survey

I asked respondents to indicate whether each of seven potential reasons was a major reason a minor reason or not a reason why they participated in the current survey (see Table 4.5). About two-thirds of each sample reporting that a chance to win the

lottery incentive the incentive (either an iPad2 or gift card) was a major reason why they completed the survey. A larger percentage of students reported that the incentive was "a major reason" for completing the survey than any other factor. "Wanting to help the university gather information," and "wanting to express your opinion were marked" as "a major reason" by more than one-half of all respondents. In both the spring and fall surveys, at least three-fifths of respondents reported that each of the seven reasons was a major or minor reason for participation. The lowest reason for participation was "you like participating in surveys," marked as a major or minor reason by 63.2% of the fall sample.

Differences by Semester

Respondents to the fall survey were more likely to report that "a major reason" why they participated in the survey was because "the topic sounded interesting" than were respondents to the spring survey (36.0% vs. 29.0%; p. = .020, X^2 = 7.882). Fall respondents were less likely to indicate that wanting "a break from studying or work" was a major reason for completing the survey (29.0% vs. 36.5%; p = .012, X^2 = 8.838). These differences may be due to a time of the semester effect. As noted earlier, the spring survey was in the field during the last week of classes whereas the fall survey was launched one month before final exams. In other words, it is possible that a larger proportion of students were engaged in intensive studying or other academic work at the time the spring survey was administered than when the fall survey was administered. If this were the case, a larger percentage of students in the spring than in the fall might consider the survey to be a "study break." Similarly, fewer students might have been motivated by "an interesting topic" if a greater percentage of students were embroiled in

academic work at the end of the spring semester than during a more typical week in the fall. No other differences in motivation were found between the two samples.

Correlations Between Motivations

There were a number of statistically significant correlations between the motivation items, all in the positive direction. For the spring survey the largest correlation was between, the items, "the topic sounded interesting," and "you like participating in surveys," (ρ= 490, p. <.001) (see Table 4.7). The second largest correlation was between the items, "the topic sounded interesting," and "completing surveys is part of what it means to be a [institution name] student," (ρ =.473, $p < .001$). With the exception of the correlation between the items, "you wanted a break from studying or work," and "you wanted a chance to win an iPad2," each motivation item was correlated with all others in the spring data set.

Correlations conducted with the fall data set showed a similar pattern (see Table 4.8) with correlations of similar strength and direction for most items. For example, like the spring findings, the strongest correlation was between "the topic sounded interesting" and "you like participating in surveys" (ρ = .495, $p < .001$). The only statistically significant correlation with the incentive motivation was "you wanted a break from studying or work" (ρ=.250, $p < .001$).

At face value, wanting to help the university, interest in the topic, wanting to express one's opinion, liking to participate in surveys, and participating because taking surveys are part of what it means to be a student, appear to tap into intrinsic motivations or senses of altruism. Responding to the survey because of the chance to win the lottery incentive or as a way of taking a break from studying or work, seem to be more extrinsic

motivations. All of the "intrinsic" motivations are intercorrelated for both spring and fall surveys, whereas the extrinsic motivations were intercorrelated with some, but not all, of the other items. Most notably, the incentive motivation seems to operate largely independent of other motivations, particularly in the fall data set. The relative lack of correlations with other items suggests that the incentive may in fact, induce students to respond to the survey who might not otherwise do so. In addition, the similarity between the correlation matrixes from spring and fall suggest the relationship between these motivations may have some persistence rather than being heavily influenced by time of the semester.

Class Year and Motivation

Crosstabulations revealed very few differences in motivation by class year. In the spring survey, first year students (52.5%) were less likely to report that the chance to win an iPad2 was a major reason why they completed the survey compared to sophomores (69.0%) and juniors (71.4%, $p = .013$, $X^2 = 16.190$). In the fall survey, juniors were more likely than seniors to report that "the topic sounded interesting" was not a reason why they chose to complete the survey (33.1% vs. 18.4%; $p = .018$, $X^2 = 15.288$). These findings may reflect real differences between class years. For example, it may be that first-year students are either more skeptical of the chance to win an iPad2, or might already disproportionately own an iPad compared to juniors and seniors. However, given the lack of systematic differences in motivation, I think it is likely that differences in motivation by class year are idiosyncrasies of these particular respondents. Anecdotal accounts of students' experiences at this institution suggested a lack of trust between students and administrators, a condition necessary for social exchange to operate

(Dillman et al., 2009). Therefore, I had expected that smaller percentages of upper class students than first year students would report that intrinsic motivations were reasons they completed the survey, since first year students would have had less time to have negative experiences with the institution.

Gender and Motivation

There were several statistically significant differences between men and women's self-reports of why they completed the survey (see Table 4.6). Women were more likely than men to report that "You like participating in surveys" was a major reason why they completed the current survey for both spring (p. = .039, X^2 = 6.491), and fall (p = .030, X^2 = 6.985) surveys. In the spring survey, about two-thirds of women compared to one-half of men reported that wanting to express their opinion was a major reason for completing the survey (p = .029, X^2= 7.112). In the spring survey, about two-thirds of women reported that wanting to help the university was a major reason why they participated compared to one-half of men (p = .001, X^2 = 13.842). There were no gender differences for these two items in the fall survey. In the fall survey, men were more likely than women to report that wanting a break from studying or work was not a reason for completing the survey (p. = .019, X^2=7.935).

Perhaps the most surprising finding was the similarity between men and women's motivation for completing the survey. In particular, similar proportions of men and women reported that the incentives were a major reason for completing the survey. Given the work of Laguilles et al. (2011), I had expected that a larger percentage of men than women would report that the incentive was a reason why they completed the survey. Laguilles et al. conducted four experiments to test whether a lottery incentive could

increase survey response rates. Three of the four experiments found that a lottery incentive decreased the gap between the percentages of men and women who responded compared to control groups, in each case bringing more men into the survey.

With the exception of the item, "You like participating in surveys," men and women did not exhibit differences on the same motivation item on both fall and spring surveys. The lack of consistency suggests that these differences may be fairly weak. Perhaps the similarity between men and women's self-perceived motivation is due to the fact that these responses come from survey completers. About twice as many women as men participated in these surveys, even though there were slightly more men than women in these populations. Because of the overall low response rates, it appears that the survey has operated to select a sample of "survey takers" but that this group is about twice as large in the female population as the male population.

Limitations

Several factors pertaining to the study design and some unexpected findings are limitations of this study. Goyder (1987), himself a survey on survey researcher, is often cited in noting the obvious epistemological limitations of surveys on surveys, comparing the technique to understanding a camera only through photographs. Second, these items were appended to two surveys about dining services, and it is likely that the results are influenced by the survey topic. Third, like the replication study, this study was conducted with students from a single institution in the Northeast. The results may not be generalizable to students from all institutions. Fourth, as mentioned above, it is possible that items asking students to report the number of survey requests they had received and the number they had completed were too cognitively demanding, potentially leading to

inaccurate estimates. Fifth, I had originally intended to include several other items asking students about their survey experiences. For example, I had also adapted a battery of items from Looseveldt and Storms (2008) that tapped into students' perceptions of the utility of the importance of university surveys for administrators to construct policy and for students to have a voice. Unfortunately, space limitations on the dining surveys prevented inclusion of these survey items. These items would have provided a richer understanding of how students experience the survey process. Sixth, of the students who were invited to participate in these surveys, only small percentages ultimately responded. Clearly, these reports are limited in that they fail to capture the experiences and attitudes of the nonrespondents to these surveys. Finally, these self-reported response rates in this study are unheard of in the present survey environment and cast some doubt on the credibility of these survey data. The combination of low response rates to these surveys and self-reports of high response rates to other surveys suggests that respondents to these surveys might be very different than the populations from which they were drawn. As discussed earlier, it seems likely that these items produced biased estimates of self-reported response rates due to measurement error, due to nonresponse bias, or because of a combination of the two.

Summary

The findings from this study suggest that students typically remembered receiving about four survey requests from their institution each semester. Although this is a larger number of survey requests than would have been typical ten or fifteen years ago, it is lower than what might be expected, given the perception of survey fatigue among college students. More respondents reported that the lottery incentive was a major reason for

participating in the dining survey than any other factor. Few statistically significant correlations existed between the incentive and other motivations, suggesting that the incentive may operate to induce students to complete the survey who might not otherwise have done so. However, large percentages of respondents also reported that other intrinsic or altruistic motivations, for example, wanting to help the university gather information and wanting to express one's opinion, were major reasons why they completed the survey. The lack of differences in motivation by class year, was surprising, as was the finding in the fall survey that first-year students reported responding to a smaller percentage of surveys than did juniors.

Finally, the most notable finding is the very high percentage of students who reported completing all university surveys to which they were invited. Several explanations for this finding are reviewed above, two of which bear repeating. One interpretation of this finding is that a group of "hard-core respondents" disproportionately participates in surveys at this campus. Previous research has not suggested that such groups exist, and if this explanation is found to be true it could necessitate a dramatic re-thinking of survey research at colleges and universities. Another possibility is that students are not aware of or cannot recall many of the survey requests they are sent. These requests may be directed to junk mail folders or may be forgotten in students' inboxes.

The next chapter describes the focus groups I conducted to learn about students' experiences as potential respondents and their decisions not to respond to surveys conducted by their institution. Like the survey on surveys study, the focus group study addresses the question, "How do students experience the survey response process?" In

addition, it seeks to answer the question, “Should we treat surveys of college students as organizational surveys?” Further implications of the survey on survey findings will be discussed in Chapter 6, in which results from all the three studies will be synthesized.

CHAPTER 5
FOCUS GROUP STUDY

Introduction

This Chapter describes a study utilizing four focus groups to uncover some of the nuances of students' decision-making about whether or not to participate in a particular survey and how students perceive survey requests, by asking students to talk about specific examples of when they have and have not decided to participate in a survey and what they think about surveys in general. In pursuing these questions, the focus groups will explore students' ideas about how their institutions use survey data and if their discussion of surveys reveals that their sense of organizational identity is salient when making the decision to participate in a survey. The primary questions for the focus group study are, (a) "How do students experience surveys?" and, (b) "Should we treat surveys of college students as organizational surveys?"

The next section describes the methods used in the focus group study, first discussing the focus group sites, participant recruitment and participant characteristics. Next, I turn to the administration of the focus groups and the focus group protocol. I describe the coding process, efforts made to ensure trustworthiness of results, and the role of potential researcher bias in this study. Following these sections I note the limitations of the study. The remainder of the chapter concentrates on a discussion of focus group results, concluding with a summary of findings.

Focus Groups: Methods

Focus Groups: Sites and Participants

Focus Group Sites

I conducted four focus groups to learn about students' experiences with requests for survey participation at their own institutions. Two focus groups were conducted at a large, public, research institution in the Northeast. This is the same institution at which the survey on surveys study was conducted. Two focus groups were conducted at a small, private, highly selective, liberal arts college in the Northeast. This was the same institution at which the replication study was conducted. Some of the other differences between these institutions were highlighted in Table 3.1.

Focus Group Recruitment

I recruited focus group participants by asking staff members and students at each institution to circulate a flyer, either a paper handout or an electronic attachment, to undergraduates who might be interested in participating in a focus group (see Appendix D). At the university, two classes enrolling higher education master's students were told about the project. Those who were interested in assisting with recruitment were given several flyers to distribute. In addition, a number of professional staff members and other students assisted in the dissemination of flyers to students either directly or through listservs or emails announcements. These recruiters included graduate teaching assistants, undergraduate resident assistants and staff members from academic advising, career services, the multicultural center, the honors college, and two other academic colleges within the institution. At the college, flyers were distributed through an undergraduate resident coordinator, a residential life staff member, student leaders and a staff member

from community engagement center. To facilitate recruitment of respondents, pizza and soda were provided during the focus groups, and each participant was offered twenty dollars in gift cards to one of three local restaurants.

In order to manage recruitment, I asked interested students to send me an email message to determine their eligibility and so that they could obtain more information about the project, including the location of the focus groups. I had intentionally excluded this information from the flyers to avoid having students arrive at the focus group without having previously contacted me. I asked students to indicate which focus group they could attend, their class year, major, what the last survey request was that they received from the institution and if they could recall ever not having responded to such a request. At the university, eight students inquired about participating but either never responded to the questions I sent or were unable to attend a focus group due to scheduling conflicts. It snowed on the day the second university focus group was held, causing one student to cancel her participation. In addition, one other student who had agreed to participate did not attend that focus group. At the college focus groups, one student had to withdraw from the project due to a last minute conflict, two students who expressed interest were turned away because I had already recruited enough students for that evening, and one student who had agreed to participate did not attend one of the focus groups

Focus Group Participant Information

Focus groups were of the following sizes: ten students (first university focus group), five students (second university focus group), seven students (first college focus group) and nine students (second college focus group). Table 5.1 provides demographic information about focus group participants and Table 5.2 lists participants' majors. More

first year students and sophomores participated than juniors and seniors. Approximately equal numbers of men (n=14) and women (n=17) participated in the focus groups. However the gender balance in each focus group varied considerably. For example, the first university focus group consisted of seven men and three women, whereas the second college focus group consisted of eight women and one man. Students' majors ranged across the curriculum and included students who majored in the arts and humanities, social sciences, natural sciences, applied fields, as well as undeclared students.

Statistical representativeness is not a goal of a qualitative approach. Nevertheless, it is important to note the absence of Black and Latino students in the university focus groups. There was almost no racial and ethnic diversity in the university focus groups, with one participant marking "Asian, Asian American or Pacific Islander" and all other participants marking "White or Caucasian." No participant in the university focus groups marked more than one race or ethnicity. In contrast, of the sixteen college participants, five reported being African, African American or Black, Two reported being Asian, Asian American, or Pacific Islander and six reported being Latino(a), Hispanic or Chicano(a). The population of university undergraduates is nearly 70% White, whereas White students comprise about 40% of the college population.

Focus Groups: Administration and Protocol

I facilitated each focus group, welcoming students as they arrived, and offering them pizza and soda. Before each focus group began, I asked participants to read and sign a statement of informed consent (see Appendix E) and to complete a short participant form containing demographic questions (See Appendix F). Following an introduction to the focus group, I asked each participant to introduce him or herself

providing name, class year, major, and home town. The focus group protocol tapped into students' experiences with survey requests, survey participation, and beliefs about institutions' use of survey data. The semi-structured protocol is attached as Appendix G. The focus group questions are informed by the organizational research literature (Barr et al., 2008; Rogelberg et al., 2003; Rogelberg et al., 2006; Spitzmuller et al., 2006; 2007) and the survey on surveys literature (Goyder, 1986; 1987; Loosveldt & Storms; 2008; Stocke & Langfeldt, 2004). Three of the four focus groups were approximately one hour in length. The second university focus group was about forty minutes in length. This focus group had only five participants and exhausted the protocol much more quickly than other groups.

Focus Groups: Analysis

Coding and Trustworthiness

I audio recorded each focus group using a digital recorder and external microphone, uploaded the audio file to a secure server, and manually transcribed the focus group using Express Scribe playback software to facilitate this process. Following transcription, I reviewed each transcript to correct errors. Then I began the coding process, coding the transcripts for major themes using a constant comparative approach (Merriam, 1998). I started coding by identifying notable ideas and phrases in the transcripts, and considering how each data element fit or differed from others. This involved repeatedly reading the transcripts and writing analytic memos with regard to my developing understandings of these data. I looked for instances in the transcripts that seemed to contradict my initial interpretations, and sought to reconcile these seemingly incongruous data by reassessing my categories, at times acknowledging the lack of

universality in the experiences of the participants. I also wrote methodological memos in which I reflected about the structure of the focus groups and my facilitation, in order to explore some of limitations and strengths of these data.

I used several techniques to bolster the trustworthiness of focus group data as recommended by qualitative research methodologists (Creswell, 1998; Merriam, 1998; Rossman & Rallis, 2003). During each focus group I employed frequent member checks to help ensure that I understood participants' statements in the way they intended. I also constructed an audit trail using transcripts, coding schemes, and analytic and methodological memos. Trustworthiness of the study was further bolstered by using two sites rather than one. The focus group findings are also considered in relation to the survey on surveys study, allowing for triangulation particularly with regards to understanding students' motivations to complete surveys (Merriam, 1998).

Researcher Bias

Researcher bias plays a role in all qualitative inquiry (Cresswell, 1998; Merriam, 1998). There are several important ways that I believe I might have influenced these data. First, as a straight, White, male researcher I have several agent identities as conceptualized by social justice educators (Tatum, 2000). I fully expect that these identities influenced the conversations in the four focus groups, particularly in the college focus groups which had larger numbers of students of color, more women, and international students than the university focus groups. Because the topic was not particularly sensitive, I am hopeful that participants were not reluctant to express their views.

Second, I have affiliations with both institutions, having worked as a survey researcher on both campuses. I identified myself to participants as someone who has conducted surveys. It is possible that this led some students to not disclose some of their feelings and experiences about surveys or to emphasize certain experiences. Such behaviors could be motivated by not wanting me to feel bad, or because they hoped to influence survey practices and so overstated their negative experiences with surveys. One student in the college focus groups recalled receiving a request to complete a survey from me, which she disclosed at the end of the focus group. I do not know if other participants recalled a similar experience. In the college focus groups I revealed that I would be sharing results with the college's office of institutional research. This could have served as a motivation for students to selectively report their experiences in an attempt to influence survey practices.

Third, I do not have extensive focus group facilitation experience compared to some researchers, having previously been a facilitator in about a dozen previous focus groups and an assistant in several others. I was aware of some of the limitations in my expertise as I reflected back on particular focus groups. For example, one participant in the second university focus group said very little. Although I made a few explicit attempts to encourage his participation, I believe I could have done more to facilitate his engagement in the focus group.

Fourth, my approach to analyzing these data is influenced by my extensive work in the field of college student surveys and intensive reading and writing about survey methodology and surveys of college students. I chose to approach this study with pre-existing ideas and theories about students' experiences with surveys, and I consider this

to be a strength of the study. Although I attempted to allow focus group data to disconfirm as well as confirm the ideas I had prior to collecting data, it is impossible for me to undo the preconceptions I brought to the study, for example my understanding of leverage salience theory and social exchange theory. It is possible that someone who engaged in a grounded theory approach with no prior knowledge of this phenomenon would interpret these findings differently.

Focus Groups: Limitations

The focus group study suffers from several limitations. First, caution must be exercised in attempts to speculate whether or not other students at these institutions or students at other institutions experience the survey phenomenon similarly to these participants, as generalizability is not the goal of these focus groups. The study involves a total of 31 participants from two institutions who self-selected into the study. Second, it is likely that students who are willing to participate in a focus group will share some of the same characteristics of students who are willing to participate in surveys, as both activities involve revealing one's thoughts to a researcher. Perhaps focus group participants and survey respondents are more cooperative or helpful than students in the general population. Therefore, it is possible that focus groups will fail to uncover perspectives of active nonrespondents. Third, by conducting four focus groups, I was not able to reach saturation in my data collection. A number of themes and phrases appeared in multiple focus groups, but some ideas and experiences were discussed in the last focus group that had not previously been mentioned. Fourth, students in the focus groups were able, and at times quite eager to respond to my questions about their survey experiences. Nonetheless, compared to many other phenomena, I suspect this is a relatively low

salience topic for many students. As such, it is possible that students were more actively constructing their attitudes and beliefs about surveys during the focus group discussion, than if they had been engaged conversation about a topic to which they had given considerable previous thought. Given these limitations, the conclusions that I draw should be treated as tentative and exploratory.

Focus Groups: Results

The four focus groups revealed rich details about students' experiences with surveys, their understanding of the survey process, and what they think of the surveys conducted by their institutions. In the next sections I describe the main themes that I interpreted from students' discussions. I include numerous quotations from the focus groups in order to enhance trustworthiness through these low inference descriptors (Johnson, 1997) and to convey nuances of the findings by using participants' voices. In most cases, I have attributed quotations to individual students (using pseudonyms). In instances where I was unable to identify the speaker, I have substituted "student" or "participant" for a pseudonym. I redacted names of sports teams, student groups, and departments to protect the confidentiality of student participants – in some instances at participants' requests. In many quotations I removed false starts, repaired utterances (participants own corrections of their speech), and numerous utterances such as, "like," "you know," and "um," that I believed hindered communication of a participant's ideas.

The results do not fall neatly into sections, as students' conversations often touched on multiple aspects of their survey experiences and beliefs about how their institution used surveys, sometimes in the same phrase. The results begin with a discussion of students' perspectives on the nature of surveys. Second, I discuss students'

thoughts about receiving a survey request and completing surveys, focusing on aspects of survey design, privacy, and number of survey requests. In the third section, I highlight discussion about student's perspectives on two important aspects in the decision to take a survey: having strong opinions about the topic and feeling a close connection to the survey sponsor or people who will be affected by the results. Fourth, I discuss ideas central to students' beliefs that their survey participation should have meaning. I provide brief analyses of these findings in each section and discuss the overall results at the end of the Chapter.

Understanding the Nature of Surveys

Surveys as Referenda

One strong perception of many participants in the focus groups was the understanding of surveys as referenda, rather than as tools for collecting information to be used for institutional decision-making, assessment, or research. At a college focus group, Leah explained her frustrations with some recent surveys, "With the [Dining Hall] ones I write the same comment on every single one and I've done like two or three and …. No, they do not have Special K yet." At a university focus group, Shawn made a similar observation:

> The last survey I think I did was … about the Dining Commons, and they really do not read these, because everybody who I know fills them out has pretty much the same thing to say and the food has gotten crappier since September. It's continually getting worse.

In both instances, students expected direct action to be taken on the basis of survey results. On the one hand this understanding seems somewhat reasonable, since dining

surveys often include items asking for suggestions to improve dining services. However, some students' understanding of the processes by which survey results are used to inform action seemed to be little more than a model in which students give feedback and administrators enact those suggestions.

This interpretation is bolstered by participants' discussions at both college and university focus groups, which included references to actual referenda from the student government or other campus bodies. Anne, a university student, discussed a "survey" regarding the senior class gift. "This is the only survey I've seen that has actually done something, because you can see what someone gives money to something because that's what they all voted for, you can see that. But otherwise….it's just numbers." Amanda, a student at a college focus group, offered a similar example:

> The [student government] one that they send out about spring concert – I almost always fill that out because I want to know what the options are, and I also think that they're actually asking, and will use the majority to choose something worthwhile -- and you'll know right away – like you'll get a result out of it, whereas with the [Dining Hall] surveys you could fill it out and not know if they take into account any of the stuff. Like, there's no immediate results either way.

As seen in these examples, participants' conversations often blurred distinctions between scientific surveys and actual referenda. It appeared as though many students may focus on the common feature of being asked to provide information in both types of request, and associate the explicit direct action appropriate from a vote with surveys. Other students' did not necessarily view surveys as referenda but were uncertain of how survey results might be used. For example, students in the college focus groups discussed the

recent changes to dining services and the administration of a series of related surveys. Haley explained:

> I'm a junior so I've seen the transition of [the dining hall] from freshman year and believe it or not, it's gotten better. And so I don't know if it is necessarily the surveys that are being taken into account -- maybe it is -- or if it's just general whining from a good majority of the students that has caused it. So it could very well be direct action from the statements that were in the survey, but again, I'm not sure.

It is quite possible that I inadvertently caused confusion about how surveys results might be used by asking, "How do you think the university (or college) uses survey results?" Although I did not intend to lead students to think that suggestions reported on surveys would necessarily be implemented, and specifically probed about the role of surveys in decision-making, I wonder if some students, lacking other ideas about how surveys might be considered, concentrated on this idea of surveys as referenda.

The view of surveys as referenda was not universally shared. For example, when asked about knowing how survey results are used. John, a student at the college, commented, "I'm not so concerned whether something gets put into action, because a lot of the time that's difficult to do. You're not going to solve all the first year writing experience in a survey." John, who was aware of the specific workings of some college committees, saw surveys as tools to inform a large set of administrative processes at the institution. At a university focus group, Jennifer reported participating in surveys because she "believed in research." In discussing her motivations, she acknowledged that surveys can help researchers better understand college students' experiences.

Students' conversations suggested that conceptions of what could be considered a survey seemed varied. For example, at the college focus groups, one student began describing participation in a psychology study then stopped to ask if that was covered under our discussion. Mark, another college student, mentioned that the college had sent a form that students on financial aid could complete to receive meals during spring break. Mark characterized this administrative form as a survey. Similarly, students in the first university focus group talked about course evaluations as surveys whereas participants in the second university focus group did not talk about course evaluations until I prompted them at the end of the focus group.

Sampling and Measurement

Related to the idea of surveys as referenda, one theme undergirding a number of students' statements was a lack of understanding of survey principles, most notably, sampling and measurement. Particularly at the university focus groups, a number of students seem to have difficulty reconciling the idea that administrators might use student surveys to aid in decision-making without hearing from each and every student. Anne commented,

> It would be nice to get everyone's opinion and have a consensus of what people would like to do, but, again, we're not a democracy here – there's like 25,000 people give or take, you can't get everyone to (A) be involved to get their opinion and (B) listen to everyone. So I agree that sometimes when it comes down to it, they [administrators] have to do their job and make decisions and sometimes that's with opinions and sometime's that's without.

At the other university focus group Dan's comments reflected his disbelief that survey results could be used by institutional decision-makers.

> As far as surveys go, I fill them out and put a lot of ridiculous stuff on there…just to see if anybody actually reads them. Because you're sending a survey out to thousands of people, and what if we all responded? Are you going to read them, really? No.

Perhaps because of the differences in the size of the two institutions and the college's frequent use of census surveys, similar comments did not arise in the two college focus groups.

Other participants' comments revealed misinterpretations of survey measurement. In reference to a recent dining services survey, Shawn remarked, "I hate when they rephrase the question, as if they're going to catch you. You're asking for my opinion! And so, that's obnoxious to me." In this instance, I suspect that the survey employed items with slightly different wording as a way of improving survey measurement, not in an attempt to try to screen for "cheating." Shawn continued, "You don't need to ask people these questions, you can tell by when they show up and what they're getting." Again, this comment revealed that Shawn had a different understanding of survey items than a survey researcher would have. For example, dining services can track when students enter the dining halls. However, it is still necessary to ask this question on a survey if it is important to compare or correlate the times that students' eat with their attitudes and opinions about their dining experience.

Students' Perceptions of Nature of Surveys: Summary

Focus group participants discussed a large number of different data collection tools under the umbrella of "surveys." Many students conceived of surveys as referenda, expecting that their suggestions would be implemented in a manner similar to a vote. However, other students perceived survey results as a tool for administrators to make decisions and for researchers to understand college students' experiences. Focus group conversations at the university suggested that some students may distrust surveys because they do not understand how sampling might enable accurate results to be gathered without surveying the population of students or the importance of aggregated results to closed-ended questions. These understandings of how surveys work seem to affect students' attitudes toward surveys and how they decide to participate; ideas that are further elaborated in the sections below.

Survey Experiences

The first question I asked in focus groups was, "What comes to mind when I ask about surveys from the university (or college)?" In each focus group among the first responses were that surveys were long, and either boring, or annoying. Hank simply stated, "They seem like they'd be boring so I just don't answer them -- ever." At the college focus group Miguel offered,

> I think time consuming. First thing, I'm like, "Oh my God… if I do this it's going to take time away from other more productive things that I could be doing, that actually matter." Not that they don't matter, but that matter to me.

Neil, a student at the same focus group, explained, "I usually try to do surveys, but when I first get a survey I feel sort of burdened, because I feel morally obligated to do it, but I really don't want to."

Students also discussed a number of factors that cause them to participate in surveys. Several students in the college focus groups described their general approach to survey requests. Haley, a college junior, explained, "With me if I take a survey or not depends on my mood – so if I'm opening my email and I'm in a pretty decent mood and like, I have time to kill, I'll take it." Another student at that focus group shared, "If I look at it or if I see the email and I'm doing something different and I close it, I'll never open it again. I'll just delete it. It has to be an 'in the moment' thing." After hearing several students discuss their dislike of surveys, Leah responded, "Yeah, I guess I'm weird, I don't really mind doing surveys, especially if they're short. And I don't really care, as long as they don't take too long." Some of these comments suggest a somewhat whimsical attitude toward surveys. Danielle, explained that she sometimes completed surveys to distract her from school work:

> For me, I have a habit…when I'm on my computer…reading an article or something, I check my email to look for ways to procrastinate, so if I see a fifteen, twenty minute survey in there, I'll be like, 'Oh, I need to do this! Can't do my reading right now.'

Overall, these comments suggest that students are willing to complete surveys if they do not believe them to be too burdensome.

There were fewer positive comments about surveys in general in the university focus groups. In describing one recent information technology survey at the university

Collin remarked, “The prize was a Kindle or something, it was pretty quick, wasn’t bad.” As university focus groups progressed, students shared more positive experiences with surveys, but often with regard to a particular instance rather than surveys in general. Next, I discuss students’ thoughts about incentives, questionnaires, and privacy.

Incentives

Prior to the focus groups, I knew that surveys at the university used lottery and cash incentives more often than surveys at the college; which was reflected in focus group discussions. Students discussed incentives as a clear benefit of survey participation, particularly in the university focus groups. Lottery incentives were an important motivation for participating in surveys for a number of participants. Emily, a university student, explained, “When it’s raffles for iPads, I always have to do them ….I’m going to win one day, so everything else for raffles I don’t do, but iPads….” A university student explained that if he is interested in the topic he might do a survey without an incentive, but that “If it’s something I’m not interested in, then that’s [an incentive] like the only reason I would do it.” At one of the college focus groups, Julio explained his decision to participate in the National Collegiate Health Assessment, one of the few college surveys to offer a substantial lottery incentive in the recent years, “The $100 gift certificates got me for that one….There were two $100 gift certificates that were going to be given out, and I was like, ‘alright, why not?’” Several focus group participants seemed surprised that Julio was motivated by the lottery incentive, remarking that they would never think they might win such a lottery. In a university focus group, Lisa expressed similar skepticism about the potential to win a lottery incentive. “I stopped doing them [surveys] just because they’re typically raffles and I guess incentive-

wise I figure my odds aren't really that great in the raffle so….I don't really think it's worth my time."

The discussions of incentives revealed that some students think of incentives in a manner consistent with social exchange theory. For some students, incentives are a benefit, potentially the most important benefit, of participating in the survey. For students like Lisa, lottery incentives may not be sufficiently appealing to encourage survey participation. However, other students' discussion of incentives indicated that they think of surveys and incentives primarily in terms of economic exchange. These comments were almost exclusively in the university focus groups. One of the first comments in a University focus group was from Dennis, a first year student, who offered, "Personally, I hate surveys unless there's some sort of beneficial aspect of it," referring to payment or other substantial incentive. In the other university focus group, Adam succinctly described why he participated in a recent survey. "You got like a ten dollar gift certificate if you did it. So that's why I took it."

Respondent-(Un)friendly Questionnaires

Participants in focus groups at both institutions experienced problems with survey instruments themselves. For example, at a college focus group, Amanda described the problem of completing surveys because she mostly reads email on her smart phone, but finds it impossible to complete surveys with that device, "So, if I'm actually at a computer and get it, I'm much more likely to do them. But I rarely ever check my email on the computer." Focus group discussions focused on two particular aspects of unfriendly questionnaires – survey length and poorly constructed instruments and items.

Length

Survey length was mentioned as a problematic aspect of surveys in all focus groups. For some students, the problem in length was tied to inaccurate estimates of how long the survey would take to complete. Others thought that the survey asked an unreasonable amount of detail, requiring more time than they wanted to devote. "I got one the end of last semester and I was like, 'Oh, I have twenty minutes. It says in the email, it will take no more than twenty minutes.' And I sat there for almost forty five..." Several students in the college focus groups discussed starting surveys, but often not completing them because they felt they were too long.

Poor Construction

Another, common expression of irritation was experiences with poorly constructed survey items. For example, in a discussion of a survey about gambling, Dan shared a frustrating experience with an online survey "It's even worse when you're online and you're like, 'no, I don't gamble,' and they keep asking you questions about gambling." Lisa described another problematic experience with a residence life web survey in which she was forced to rate her experiences with peer mentors to advance to the next page of the survey, even though she had never interacted with peer mentors. Amina, a college focus group participant, described the problem she had with a recent survey about first year seminars because most of the items were inapplicable for her particular course. At the same focus group, Haley related her perceptions of poorly constructed survey items on the National College Health Assessment:

> The questions were something like, "How much information have you received on sleep, depression, alcohol, XYZ?" and all of them were like, "A lot, a little,

> none," or something from that scale and I kept thinking, "Well, what do they consider me getting information?" Maybe this is crude, but if I'm sitting in the bathroom …and my [Resident Assistant] has put up a thing on sleep tips, does that count? Does that count – is that what they're looking for? Do I have to have sat down with [a health educator] and talked about my drinking issues or something like that? And I just couldn't figure out what they were looking for from me …and I wasn't sure that how I was answering was what they were looking for because it just all seemed so unclear. So I kind of stopped at that point because I just didn't … feel like what I was giving was an accurate response of what I wanted to say.

Recently, Porter (2011) critiqued college student surveys, questioning whether they had any validity. Haley's comments speak directly to Porter's critique of the lack of clear definitions in many college student surveys, contrary to principles of good survey construction established by public opinion researchers (Groves et al., 2009). In Chapter 2, I discussed Callegro's study illustrating the potential challenges of conducting web surveys with respondents who access their email via their smartphones. Amanda's experience with this problem illustrates that this should be a concern for researchers who conduct surveys of college students. The problems with the surveys described by Lisa and Dan are reflective of bad survey practice, suggesting that the people who designed these surveys had no training in survey methods. In the gambling survey that Dan described, the researcher should have programmed skip logic that would have moved the respondent past items related to gambling, once he or she reported never gambling. In Lisa's residence life survey, the researcher failed to adhere to a basic principle of survey

research – that every respondent should be able to answer each question. In the case of an item asking about experiences with peer mentors, one of the response options should have been "not applicable." One of the most important ways of minimizing perceptions of survey cost is to create instruments that are short and easy to complete (Dillman et al., 2009). From the survey experiences described above, it appears that Dillman's emphasis on respondent-friendly questionnaires is routinely violated by researchers who conduct college student surveys. It is not surprising that college students who have attempted to complete these poorly constructed instruments are reluctant to participate in subsequent surveys.

Privacy

A few students raised concerns with privacy or confidentiality. Those who did express concern were not worried about ill-intent on the part of survey researcher, but rather potential problems related either to electronic data security, or being identified because of participating in a small-scale survey or evaluation. For example, Jackie, a college senior, described her reaction to the National College Health Assessment.

> I think another thing is when you're dealing with topics that are sensitive like, drugs and sex and things like that and they say, 'Hey, …you're going to be this unidentified number…it's computerized…. At the same time, you wake up in the morning, you pull out a New York Times, and it's like, 'Oh your iPhone can scan all your data and send it somewhere else….'So I would imagine that whoever's collecting it has no intention of this getting out, but I think it is a little bit scary….

This sentiment was not universally shared. Sarah responded to Jackie's comment, "I personally didn't have that thought at all, and even if that information got out somehow, I

don't think that anyone whose opinion I particularly care about would find out … that seems like kind of a stretch." Other students noted that most of the surveys they were asked to complete did not include particularly sensitive questions, so they generally did not think about potential confidentiality concerns.

Students also discussed small-scale surveys, in particular course evaluations, and evaluations of residence life staff and athletic coaches in which they were concerned about being identified. Jackie also discussed this privacy concern, "It doesn't really work when you have small numbers …and you're being asked to say what class you are, what gender, what team. Of course there's no privacy with that. It's ridiculous." At the university focus groups, some students expressed concern about being identified in faculty evaluations. One student described her reluctance to be critical on course evaluations in a small class whereas she felt sufficiently comfortable being honest in a course of two hundred students, because she could not be easily identified by the professor. Another experience shared by many participants was completing an evaluation of their resident assistant. Mark, a college senior who had been an RA, discussed his experiences of reviewing his evaluations.

> We get to read evaluations, and even though we don't get names, sometimes it gets very obvious who's answering what questions. Because the way they present it to us it's in an Excel spreadsheet…names are gone.... but it's like one person's responses are linear. So… you can figure out who people are.

Paula, a student who currently held a similar position, corroborated Mark's experience in reviewing her evaluations. In general, students expressed greater concerns about being identified in small-scale surveys and evaluations, than in large survey projects.

Number of Survey Requests

In one university focus group students' mentioned receiving required surveys for courses, institutional surveys including information technology, and dining services, course evaluations, surveys for psychology courses, comment cards at dining halls, product review, surveys requests that students identified as "spam," course evaluations for non-academic programs, external "campus live" surveys, surveys from researchers at other campuses, alcohol surveys, surveys from the school of management and college of humanities and fine arts, and surveys from businesses. Hank commented,

> Whenever I call my bank they always say, 'if you want, stay on the line for a brief survey.' And I always just hang up as soon as I'm done with the bank. I don't understand…I just want to pay my bills.

Other focus groups produced similar laundry lists of survey experiences. In one extreme case, Dan, a university student, reported receiving two or three survey requests per day, to which other participants expressed surprise saying, "I don't get that many at all." Most university students reported receiving far fewer surveys, with the majority of university focus group participants agreeing that they received about four requests to complete a survey each semester, with one student replying, "the occasional survey." At the college focus groups, students reported receiving more frequent requests for survey participation. At one college focus group, when I asked what else I should hear about students' experiences with or thoughts about surveys, Jackie responded:

> They should be used sparingly, I think there's a season when you get a ton of surveys and just sort of get fed up with it. So, If they're used sparingly, then

> you're like, 'Oh, this is actually important.' So if there's too many it sort of dilutes the importance or the perceived importance of them.

There was greater variation in college focus group participants' reports of how many survey requests they received each semester than in university groups, with some students estimating about five, and others reporting "ten to twelve" per semester. One of the ways in which survey participation can be increased is to convince a potential respondent of the scarcity of opportunity to respond. Unfortunately, the number of surveys received by students contradicts this idea. As Goyder (1986) found in his survey on survey study, the number of survey requests is associated with having a more negative attitude toward surveys. In fact, surveys appear to be so ubiquitous for today's college students that it is not surprising that some students find them to be a nuisance.

Two Important Considerations in the Response Decision Process

Strong Opinions

Participants in every focus group perceived that surveys were completed by people who had strong opinions about the survey topic. Collin reflected, "I think I'm more likely to respond to a survey if I'm unhappy about something than if I'm happy with it." After other students voiced their agreement, he continued, "If I'm unhappy about the dining commons and I get an email, maybe I'll fill it out. But if I was satisfied with everything --as bad as it sounds --I probably wouldn't fill it out." Jeff, another university student replied, "That's actually probably what they're looking for," and further suggested that offices did not need to hear from satisfied students since students from those surveys would not provide information that could help direct change. Danielle, a

student at a college focus group, related a recent survey experience that reflected similar ideas.

> I think most people are more inclined to do a survey on something that they feel really strongly about. So, when I was doing the Freshman Seminar survey – I hated my freshman seminar, so I was actually taking time and writing out answers … because I didn't want other people to have to go through that seminar.

Others focus group participants emphasized that strong positive as well as strong negative opinions could lead students to complete a survey. Sarah also reflected about her recent experience with the first year seminar survey, "It actually asked a lot of you, but I filled it out mostly because I had a really good experience and really good memories of that so, it was almost, like, fun for me to fill that out." At one university focus group, Collin described his approach to course evaluations,

> There's been classes that are gen ed – I don't even bother filling it out. I don't feel strongly about the professor…In my smaller courses --my honors courses, business courses -- I take a lot more time filling out the surveys. I take them all more seriously**.**

Although one principle of survey research is to obtain responses from all sampled students, these focus group participants are probably accurate, at least to some extent, in their description of student behaviors. Given low survey response rates (e.g. 22% response rate to a recent student government association survey at the university), it is likely that many respondents are those for whom topic has a strong salience. This topic effect likely biases survey results. If large proportions of students are only responding to surveys when they feel strongly about the topic, response distributions for primary items

of interest may have more extreme responses than are representative of the population as a whole. In other words, main items of interest may be disproportionately "missing the middle" of the response distribution.

Close Connection

Related to the idea that students complete surveys when they have a strong opinion about the topic, focus group participants repeatedly described participating in surveys when they had a close affiliation with a group or individual involved in the survey. For example, Jessica, a senior at the university, shared the following, "I work in [an] advising office and the success coordinators send out surveys all the time…and whenever I get them…I take them really, really seriously, because I watch her go through them, look at the responses." Christina, a university sophomore, remarked that she put effort into surveys when she felt a "close connection," to someone and offered the following story about completing a course evaluation,

> I had a really great honors professor last semester and I got to know her really well and we clicked great, and she was a great professor. But I thought there were some things differently that she could do, just little tweaks, so I wrote that down. But, I think I would only do that because I knew her. But, like, otherwise, I would have just been like, 'Oh whatever, she's great.' Like, 'I don't care, I'm not writing anything.'

In the other university focus group, Lisa explained how she distinguished between campus-level surveys and surveys for smaller programs or departments.

> I would probably differentiate between an institutional level and…things that I am personally involved with. So the clubs that I'm involved with, my residence hall,

> council, I would say that on an individual basis those are much more responsive to feedback and to personal opinion – I'm not sure if that's due to the size or the fact that everybody involved wants to be involved..."

These sentiments were not unique to the university focus groups. Even at a small college, focus group participants made note of the greater importance in completing surveys for small groups in which they were involved." Amanda explained,

> Something that you have a voluntary association with, like with your [sports team] and I know with [a student group] I have to fill out surveys every year for that, and I generally do them because it's something that I volunteered to be a part of, so it's kind of like an obligation that I signed up for to take this survey.

Given that students choose to be associated with their college or university, I asked Amanda if she could talk about the ways she thought differently between her student group and the college. She explained, "There definitely aspects of [the college] that you sign up for indirectly by going here, but not directly. They're not foremost in your mind all the time." Other students named "empathy," as a motivation for completing surveys sent by other students, for example, Leah identified with psychology majors who sent surveys for their thesis research, and Dave reported completing engineering surveys sent by fellow majors. Some students discussed receiving personalized requests as important in making them want to respond to surveys. At a university focus group Jessica explained the importance of the email invitation:

> If it's a little more personalized I think I'm more apt to open it and care about it. But …if I get the sense that I'm just one of a sea of people who are doing it, then I won't respond."

Nate expressed his agreement, adding, "Inside, when it actually says, 'Dear 'your name' – I know it's a very simple computer thing to that -- but if it has it in there, it's like, 'Oh, they're talking to me.'"

The importance of close connection is related to trust, an essential condition for the operation of social exchange theory. These comments suggest that sponsorship is important as students do trust surveys when they feel like they have a connection with the sponsor or a responsibility toward a group. Dennis, a first year student, explained how his experiences with larger university systems and structures, for example the course registration system and advising, has made him feel disconnected from the university.

> On this campus you're forced to figure out a lot of things on your own and it makes you feel very less communal. Like, I have a very good community in my dorms, but I don't care about the campus, because nothing that I say or do actually matters. It just feels that way, it feels disconnected.

Dennis's comments fit with other students' statements that they feel greater connection and responsibility to smaller groups than to their institution as a whole.

Surveys Should Have Meaning

This last section discusses results related participants' perspective that their survey participation should have meaning. This idea is one of the strongest themes across focus groups. This section begins by highlighting students' descriptions of instances when they believed their survey participation mattered. Then, I discuss students' perceptions that, at times no one is looking survey results or reading comments on surveys, and that surveys are used as propaganda.

Students Want Surveys to Have an Effect

In every focus group, students talked about wanting their voices heard and their responses to have an effect. Generally, this was more important to participants than any other factor in their decision to participate in a survey. Dennis, who had emphasized the importance of incentives earlier in the focus group expressed a different view at the end of the discussion, "The only incentive that I would really need would be to know that what I was saying was actually heard." At another university focus group, Anne remarked, "The last one I did was about sophomore housing…and I did it because I'm going to be a sophomore next fall, so obviously I want a little bit of say in what they're doing." Sade commented, "I generally don't do surveys ever really, unless it's sent to a small group of people, in which case you know your input matters." Later, she elaborated,

> I feel like filling out surveys, that are just, like food for thought for someone out there…just seem kind of pointless in the grand scheme of things, but then when you are taking a survey about something that you're either passionate about or know your survey will somehow impact a change…whether it's small or huge – then you're definitely more compelled to fill it out – whether it's long or short.

Nicole explained her thoughts about taking a recent survey about orientation. "I kind of looked and said, 'Ok, well maybe they'll actually start thinking about it.' Like, if enough students kind of say, 'Oh, they probably shouldn't extend orientation.' Then they won't extend orientation. Shawn, who had expressed strong criticisms of most surveys, shared a very different perspective with regards to surveys and evaluations conducted by the department in which he majored.

> The best surveys I fill out are those inside the [name of major] department, and I know it's a very departmental thing. The chair of our department, was really clear about results when she took over as chair and the very next year she actually had this big meeting with the student body and all the professors …. and so they have a meeting at the beginning of each semester to make changes to how the classes actually run and the ideas they're going to pursue to engage students differently.

Shawn's comment also relates back to the importance of having a close connection with the survey's sponsor. Shawn was proud of how his department operated and pleased that students' perspectives were taken into account in planning and decision-making, something he said he had not experienced outside of this context. Another student explicitly described assessing whether or not her survey participation might have an effect as one criterion when deciding whether or not to respond.

> When I get a survey, I kind of try to get a feel for who the people are who are sending the survey and if my input actually matters. Like I know [dining services] sends out a lot of surveys and they're really committed to making changes…so I would actually take the time to fill it out.

John described a similar view of survey participation when he described completing a recent survey.

> I think that the writing instruction at [the college] is not very good. And so – while I was filling out the survey I was trying to do this as truthfully as possible, but I also had in my mind the fact that I kind of what them to get a negative response about these so that they can actually improve this program.

John's instrumentalist approach to surveys might be linked to his awareness of how they operated at the college, whereas some other students did not articulate connections between planning or evaluation and survey research.

Black Hole and Trust

Students' also articulated their desire for surveys to have an effect by describing numerous instances in which they believed that responding to survey questions might be pointless. With regard to open-ended questions, Neil remarked "I often feel that when I take a survey that it's sort of going into a black hole of nothingness." Mark responded to Neil's comment, "That going into the nothingness is something that really bothers me about [the college]….it's not really going into nothingness, it's not even caring!" Mark further elaborated by explaining the college's policy regarding course evaluations for tenured faculty members, "You had to give your students surveys and collect them, but as far as you're concerned, if you were a tenured faculty member, you could collect them…and light them on fire right there….and never look at them." Jackie, offered a similar experience with regards to evaluations of her coach,

> Every semester we all fill out the evaluations thinking, 'Oh, maybe this year it will change,' all putting zeros for her competence…because she's terrible. And they must just go into a black hole….Cause nobody cares. The fact that every year all of your players are giving horrible, horrible reviews and nothing changes. I mean, I have no incentive to go and do these evaluations.

Propaganda

A more extreme articulation of the idea that survey responses had no effect was the idea that colleges and universities employed surveys as propaganda. One university

focus group participant, Christine, wished that surveys were "actually directed towards us, and not towards selling the campus to other people." Christine, like some other participants believed that the university conducted surveys to collect "evidence" that could be used to show the institution in a positive light. When asked how his institution used survey data, Shawn replied, "What happens…absolutely nothing. They send it out so you feel better. I mean, its basic propaganda. It's like…"we're listening." No you're not." In another focus group, Emily gave her perspective on why university administrators conduct surveys, "I feel like surveys are a good way of showing students that they *think* that they're interested in their opinions." Leah voiced concern that the dining surveys she was asked to complete by her college were deliberately constructed to draw attention to positive experiences to minimize student complaints.

> I almost feel like though, the [Dining Services] surveys are made to make us less whiny. Like the questions they ask are like, "Is the staff nice?" and then you think, "Yes. They're nice." So then you feel kind of bad complaining and then they want to bring the positive things to your attention…. I kind of feel like they're asking just to make it seem like they care.

Several university students expressed skepticism that administrators valued information that could be obtained through student surveys. Anne commented about surveys from residence life, "I'm in res life, and I think it's funny that… they give you surveys – like they don't care. I'm not trying to sound negative…they don't' care about the students' or RAs' opinions." Another student framed his belief that student survey results would not be considered through the actions of administrators outside of the survey context, explaining.

> There have been a lot of protests and…the people in charge seem to be going against what the student body is saying. They want to get exponentially larger freshman classes and no one wants that and they're just doing things that seem to be counter to what everyone wants.

At one point in time the cost of conducting surveys, including training and paying interviewers or printing and mailing questionnaires, would help ensure respondents of the legitimacy of the enterprise. In part because of these costs, respondents might be likely to assume that researchers wanted to know the answers to the questions they asked and would use the results. Now that surveys web surveys cost little to conduct, their use has proliferated. In addition to the low cost and lack of expertise needed to put a survey into the field, it is not surprising that students do not trust surveys at face value.

Students Want to See Survey Results

At both institutions, students expressed strong desire to see the results of surveys, particularly studies in which they had participated. Because they had not seen the results of previous surveys, students were skeptical of subsequent survey efforts. Very few students could point to instances when they had seen results. In a university focus group, Dennis exclaimed:

> One thing that I absolutely hate about surveys is that you'll be asked to take a survey and then you'll get no follow up at all. Now, sometimes it makes sense, like if it's a "What do you think about the environment?" then it's my opinion, that's it. But like, I've taken surveys where it's seems to me that I've put a lot of effort into the survey … and I never ever get anything back. It just kills me.

At the same focus group, Collin remarked, “I’d love to know the conclusions, like how the data’s actually implemented… what everyone said collectively. Jessica expressed similar thoughts, “There have been studies that I’ve seen that I would have loved to know what other people thought…. So an email back saying, ‘50% of people agreed with this.’” Similar thoughts were shared in the college focus groups. John explained,

> I’m also much more likely to do it if they share the results with me. So [Dining Services] does an OK job with that, but some of the committees, like faculty committees, will take it and sort of hoard it. And that really bothers me.

Several students in college focus groups were able to recall instances of seeing the results of surveys. One student commented about seeing results to a dining survey that had been placed in the dining hall, “I remember they had the results…those were interesting to just look at.... I think next time they do something like that more students will respond just because they see that their responses will be up there.” A few other students reported seeing the results of a senior survey and a general student survey that were presented on large posters outside the Dean of Students and Registrar’s offices in the main administration building. However, only one or two participants in each group was aware of these posters.

Participants at both university focus groups cited a statistic from an alcohol survey that stated, in the words of one participant, “Eighty-two percent of all [university] students said that going to class was never affected by their drinking. This was one of the few examples participants could recall in which the university shared survey results. However, students were skeptical of this finding and how the university used this information. Hank referred to a popular, satirical Facebook page about the university,

"There's also that … meme right now. '82% of all [university] students…said that going to class was never affected by their drinking.' And next to it there's a guy laughing." Christine commented that she thought the posters were "propaganda." In discussing the survey from which this statistic was computed, Dennis explained that he was apprehensive about responding honestly, because the survey was conducted following a course that suggested, "If you drink, you'll die." In the other university focus group, one student explained, "I was in an RA training session where they explained how they got the information, and it was really complex and it didn't seem like it was legit." It was striking to me that students in both focus groups described this statistic as one of the few instances they could recall of having data shared with them, and it was a statistic they did not believe to be accurate.

Dillman et al. (2009) suggested that telling potential respondents about how results were going to be used was an important way to show potential respondents the benefits of survey participation. When possible, sharing aggregate results can assure respondents that their responses were valued. Rogelberg et al. (2003) suggested that respondents' perceptions of how results were used would affect response in an organizational setting. From students' comments, it is clear that, for the most part, they are unaware of the opportunity to see survey responses. In some instances, this is due to an institution not sharing results. In others, there appears to be a problem with communicating the availability of survey results to students.

Discussion

The focus group discussions revealed a number of important ideas for researchers to consider when conducting surveys of college students. First, many students do not

think about surveys as tools to estimate population parameters, analyze differences among groups and correlate variables of interest. Although it is not unexpected that students lack some understanding of nuances of survey research, it was surprising that many thought of surveys as synonymous with referenda and that many students could not articulate how surveys might be used to inform decision making except as a way of gathering student suggestions. Students' conception of surveys also had ramification for their thoughts about representativeness of results. Partly, this is likely due to the lack of successful communication between these institutions and focus group participants. Many students could not articulate why surveys are conducted, how data are used, and what the results of previous surveys have been. In some instances, institutions may be making efforts to increase students' awareness of surveys, for example, one or two students in each focus group at the college had seen the results of the senior survey posted by the Dean of Students office, but most participants were unaware of the presentation of these results.

Second, students described several survey design features that contributed to their attitudes toward surveys and their decision to participate in a survey. Many participants named incentives as an important reason to participate in a survey. Several participants framed incentives in purely economic terms, a potentially troubling finding if this has become, or will become, a common perspective among students. Participants spoke about numerous experiences with poorly constructed questionnaires, and vague items that contributed to their distaste of surveys. Survey length was very salient for participants, with students at every focus group identifying long surveys as a problem. Privacy was a concern for some students, most often in the case of course evaluations or other small

scale studies in which they could be identified through their responses, rather than in larger survey projects. Students varied in their reports of the number of survey requests that they received, but participants were clear that surveys should be used sparingly, at that such use would emphasize their importance.

Third, students' talked extensively about responding to surveys when they had strong opinions about the subject, suggesting that college student surveys may suffer from high levels of nonresponse bias due to topic effect. Moreover, this perception that people do respond to surveys when they feel strongly about the topic contributed to some students' distrust of the representativeness of survey results.

Fourth, participants identified feeling a close connection with the survey sponsor and believing that results would be implemented as import considerations when deciding to participate in a survey. In many instances, students reported being more likely to respond to surveys that came from sub-units of the institution (e.g. academic departments), other students (e.g. student government), or other groups with which students had a close tie (e.g. student clubs), rather than "the university" or "the college."

A considerable amount of focus group discussion was devoted to the importance that survey participation have meaning. In general, students had not seen the results of previous surveys that had been conducted at their institutions, and were unaware of how surveys were used to inform particular decisions, evaluate programs or services, or provide a richer understanding of student experiences. In the most extreme cases, students conceived of surveys as propaganda – tools used by administrators to convince students that their opinions mattered. Other students voiced unhappiness in feeling like their survey responses went into a "black hole," in which they responses were never

analyzed or read. However, students in each focus group identified instances in which they participated in a survey and felt like their participation mattered. One college student explained:

> And I think the fact … I've taken surveys and seen results – it draws you back to say, 'I'm going to take this survey thinking, hopefully in this instance it will be good rather than one of the black hole instances.' So, I think everybody has seen good outcomes and that's what does bring you back to take more surveys. I think if everybody just assumed that all of your responses went into a black hole, nobody would ever do them.

In many instances, students discussed surveys in ways that were consistent with an organizational perspective on survey response. Participants referred to experiences inside and outside of the survey context in ascertaining whether or not their institution seemed to value students' voices. It was clear from Anne's description of residence life administrators and Mark's frustration with course evaluations for tenured faculty, that their beliefs about how the organization, or sub-unit of the organization, was receptive to outside viewpoints affected their perspectives on completing evaluations. The focus group conversations suggest that because many students do not differentiate between evaluations and surveys, that such a perspective might apply to surveys as well as evaluations. Students' discussions in all focus groups clearly indicated that their survey experience was inherently tied to their multiple experiences and perspectives with their institution. For example, some surveys were thought of as coming from "the institution" whereas others were perceived as coming from a particular department. Students talk about their survey experience in terms of the three concepts of organizational surveys

articulated by Rogelberg et al. (2003) – the salience of a close connection, existing beliefs about past surveys, and the ramifications of ill effects if their privacy or confidentiality was violated. Moreover, some students' discussion resonated with the importance of procedural justice as discussed by Spitmuller et al. (2006)..

In addition, focus group discussions highlighted respondents' views about the costs and benefits of survey participation and trust in the survey sponsor, the most important concepts of social exchange theory. Dillman et al. (2009) predicate survey participation as dependent on the establishment of trust between the survey researcher and the respondent. For students, establishment of trust happened in a particular survey invitation, through organizational survey related behaviors over time and through institutional behaviors outside of the survey context. Members of each focus group discussed issues of survey costs and benefits. Some of these were particular to a survey request, such as an incentive. Others had to do with surveys in general (e.g. thinking they were too long), and a third dimension had to do with the organization (e.g. whether institutions used results). The focus group findings suggest this college and university (and in all likelihood many others) are doing very little to emphasize benefits of survey completion or laying a foundation of trust, while also increasing perceptions of the cost of survey completion.

Overall, focus group findings suggest that both leverage salience theory and social exchange theory may in fact be good lenses through which to view college student surveys. However, these findings also suggest that students' prior beliefs about how the survey sponsor values students' perspectives in general and whether survey results will be used are among the most important factors in students' decisions whether or not to

participate in a survey, suggesting that organizational research perspectives on survey response might also be appropriate. The final Chapter develops these ideas by bringing together focus group findings with results from the secondary data analysis and survey on surveys.

CHAPTER 6
CONCLUSION

Introduction

The goal of this dissertation was to explore nonresponse in college student surveys. In Chapter 1, I argued that declining response rates to surveys, one traditional measure of survey data quality, and a lack of understanding of the nature of nonresponse have created great uncertainty in the validity of college student survey results. In an effort to advance our understanding of nonresponse in college student surveys, I sought to answer three research questions: (a) Who participates and who does not participate in surveys of college students? (b) How do students experience being asked to participate in surveys? and (c) Should we treat surveys of college students as organizational surveys? In Chapter 2, I reviewed the literature on nonresponse in the general population and college students in order to situate these research questions. Then, I presented the results from three empirical studies in Chapters 3, 4, and 5. This final chapter summarizes the results from the three studies and discusses implications for higher education researchers and for future research on this topic.

Who Responds and Who Does Not Respond to Student Surveys

I sought to understand who responds and who does not respond to surveys in order to gain insight into potential nonresponse bias in surveys of college students. As discussed in Chapter 2, the higher education literature boasts few studies that address this question, so I chose to replicate one of the few recent studies that examined individual-level predictors of survey response. This partial replication of Porter and Whitcomb's (2005a) study was the primary source of information to answer this research question.

Supplemental insight comes from the survey on surveys and the focus group study.

As discussed in Chapter 3, the replication study, which was conducted at a selective, liberal arts college, found that women and students who scored higher on a social engagement measure had greater odds of completing a survey than men and students who scored lower on the engagement measure. First generation college students and students who scored higher on the enterprising personality scale had lower odds of completing a survey than non-first generation college students and students who scored lower on the enterprising personality scale. One of the most notable findings was that even after controlling for other characteristics, gender was, by far, the most powerful predictor of survey completion. In contrast to Porter and Whitcomb's (2005a) original study, the replication did not find that artistic and social personality types were associated with odds of completing a survey. Nevertheless, the replication study supports the idea that students' gender, personality and prior engagement are associated with survey response. The replication of some of Porter and Whitcomb's findings suggests the associations of gender, personality, and engagement with survey response were not idiosyncratic to a single institution, but reflect a potentially wide-spread phenomenon in surveys of college students. Also, the finding that personality is a predictor of survey completion is consistent with Thompson et al.'s (2010) study of twins and survey response. Thompson, et al. speculated that genetic factors related to dispositional and personality characteristics could account for the role of genetics in survey response.

In addition, the effects of personality and engagement on survey completion have the potential to introduce other sources of bias. As Porter and Whitcomb (2005a) noted, Holland personality types are associated with particular majors. In some studies this

could lead to particularly problematic bias at the department level, if, for example, engineering majors were less likely to respond to surveys than English majors. In any one random sample survey of students there might not be a sufficient number or cases in each major to detect such bias. Furthermore, efforts to control for nonresponse bias through weighting are particularly challenged by the notion that personality and engagement are related to response, since researchers would seldom have the data with which to form appropriate statistical weights.

The survey on surveys study provides different insight into nonresponse at a large public research institution. Based on students' self-reports of survey participation, the study suggests that a small group of "hard-core" respondents may be participating in surveys at the university. Spring survey participants reported responding to an average of 80% of the surveys they were asked to complete, and fall survey participants reported completing 70% of such surveys. However, response rates to recent surveys at this institution were typically much lower. These findings suggest that some surveys at this institution may be consistently capturing the behaviors and attitudes of a small segment of the student population, potentially resulting in systematic biases of results. Alternatively, as noted in Chapter 4, it is possible that these measures were too cognitively demanding for respondents. For example, it is possible that respondents, for the most part, remember the survey requests to which they respond and do not remember survey requests for the surveys they never complete.

The focus group study sheds additional light on the question, "Who responds to surveys?" From students' perspectives in focus groups at both institutions in the study, those students who have strong feelings about a particular topic, particularly negative

feelings, are much more likely to respond to a survey than students with less strong opinions about the topic. In addition, students who feel a close connection to the survey's sponsor or topic will respond disproportionately than other students. For example, participants reported being more likely to complete surveys conducted by their sports teams or student organizations in which they are involved, and to devote more time to course evaluations in instances when they felt a connection with their professor

Together, the three studies paint a somewhat troubling portrait of student survey response, suggesting that nonresponse bias may be problematic in many college student surveys. From the replication study, it appears that individual-level characteristics (e.g. gender and personality) are associated with survey response. The focus group findings suggest that topic effect and sponsor effects are potential problems. Finally, we might infer from the survey on survey study that a small group of "regular survey-takers" may exist on one campus. Together, these studies provide strong evidence that survey respondents and nonrespondents differ in meaningful ways.

How Students Experience the Survey Process

The focus groups and survey on surveys provide descriptive information about students' experiences with being asked to participate in surveys at their institutions. In focus groups, students talked about a wide range of data collection instruments under the umbrella of "surveys" including faculty evaluations, referenda from their student government bodies, and administrative forms. Many focus group participants discussed surveys as if they were referenda, one manifestation of the conflation of a variety of questionnaires into "surveys." Based on this understanding of surveys as referenda, several participants interpreted the lack of direct action from students' suggestions on

surveys as evidence that administrators did not read or use survey results. Moreover, other students revealed a limited understanding of surveys, suggesting that policy decisions could not be based on surveys because administrators would not be able to read the responses of each and every student at the university.

Students' focus group discussions, particularly at the university, revealed that they often saw little benefit from participating in surveys. Students rarely saw the results from surveys, in most cases did not know how results were used, and questioned the validity of the conclusions that might be drawn from surveys. Some focus group participants expressed frustration with survey items, believing that they could not successfully communicate their experiences by responding to surveys. Furthermore, focus group participants described frequent inept survey practices, for example forcing students to report about experiences with peer mentors on a web survey even if the student had not interacted with peer mentors. Others described in detail problems they saw with the way terms were inadequately defined on surveys, causing confusion with regard to how one should respond. In addition, students identified a number of salient costs of participating in surveys, especially time.

The survey on survey data suggested that lottery incentives, for example a chance to win an iPad, and other guaranteed incentives with real economic value, for example a ten-dollar gift card were an important reason why many students completed the survey. The potential effectiveness of lottery incentives to increase survey response seems to be a fairly recent phenomenon. Historically, token pre-paid incentives had been found to increase survey response (e.g. Church, 1993; Dillman et al., 2009), but only in the past several years have lottery incentives been found to reduce nonresponse bias (e.g.

Laguilles et al., 2011). Although Dillman et al. (2009) reject the notion of economic exchange as an explanation for survey response, leverage salience theory (Groves et al. 2000) suggests that economic benefits, like a small gift certificate, may induce some individuals to complete a given survey.

At each focus group, several students discussed instances in which they were happy to complete a survey because they had a connection to the person asking them to complete it, and because they believed action could be taken based on their responses. These students wanted their thoughts to be heard, particularly when they thought survey results would be taken into consideration in ways that might help other students. Other participants expressed some hope that survey results might be used, even if they were not optimistic about those chances.

The survey on survey findings suggest that students are asked to participate in an average of four surveys per semester at the university. At first, this number of surveys might not seem to be particularly onerous, especially given some the idea that students are experiencing "survey fatigue" (Porter, 2005). However, by the time these students graduate they will have received over thirty requests to complete surveys from their institution. As a survey researcher, this seems like an unreasonably high number of surveys. The ubiquity of surveys described by students in focus groups and reported by students in the survey on surveys study creates several problems for survey research. Dillman et al. (2009) argued that researchers should emphasize the scarcity of opportunity to participate in a study as a way of inducing sampled individuals to complete a survey. However, if students are regularly being asked to complete surveys, it is difficult to make the case that opportunities to participate are scarce.

Overall, results suggest that conditions in the college survey environment are detrimental to survey response. Each of the three principles of social exchange theory (perceived benefit, limiting perception of cost, and trust) appears to be undermined to varying extents. Given current conditions, it is unsurprising that many college student surveys achieve low response rates. Students' current experiences with surveys suggest that dramatic changes in survey practice, survey education, and administrative behaviors are necessary if surveys are to collect representative data. Several recommendations for how the survey climate might be improved are discussed below.

Should We Treat College Student Surveys as Organizational Surveys?

The focus group results suggest that surveys of college students should be understood from an organizational perspective. In discussing surveys, focus group participants named as important a variety of interactions between administrators and students that occurred outside of the survey context. For example, participants related their perceptions of administrators' reluctance to hear students' ideas and perspectives about campus issues to their thoughts about whether or not administrators would value survey results. Students' conversations suggest that the extent to which they have trust their institution, a necessary condition for the operation of social exchange theory (Dillman et al., 2009), was developed from survey-related experiences and from experiences outside the survey context. Furthermore, students' ideas about participating in future surveys were tied to how the institution or subunit of the institution had conducted and used surveys in the past. Since large percentages of students do not respond to surveys, it is likely that something is amiss in how surveys are conducted, how results are communicated, or how data are used on a particular campus. In addition, low

survey response rates may be indicative that large numbers of students do not have trust in their institution, a barrier to the social exchange process of survey response, but, perhaps more importantly, a reflection of other significant problems. In fact, some focus group conversations suggest that response rates to institutional surveys might serve as proxy measures of institutional health.

In Chapter 1 and Chapter 2 I argued that college student surveys should be considered organizational surveys, that they were fundamentally different from public opinion surveys, and that leverage salience and social exchange theories may under-specify college student survey response. Although focus group findings suggest that an organizational perspective is an important way to view college survey response, leverage salience theory and social exchange theory still appear to be apt models for this type of survey. As discussed in the section above, focus group participants identified perceived costs and benefits and trust as important in their decision to participate in a survey consistent with a social exchange perspective. In addition, consistent with leverage salience theory, students identified various factors that they weighed when deciding whether or not to participate in a survey, for example incentives, survey length, sponsor, and topic. However, neither of these models emphasizes the importance of the complex institutional context in which college student surveys are conducted. In particular, the weight of factors outside of the immediate survey context on the survey decision-making process differentiates college student surveys from public opinion surveys. For example, students' perceptions of how previous surveys results were used by their institution (Rogelberg et al., 2003) appears to be an important factor in future survey participation. Furthermore, perceptions of the institution outside of the survey context, for example

whether or not administrators are receptive to students' points of view, appears to be another important factor, akin to Spitzmuller et al.'s (2006) idea about the importance of perceived procedural justice in survey response.

In sum, leverage salience and social exchange theories appear to accurately model the college student decision making process, but are not designed to draw attention to the specific factors that appear to be critical to survey response in a college context. Perhaps, this is due to the lack of integration between response theories and factors related to survey response in current survey response models. For example, as discussed in Chapter 2, Groves et al. (2009) identified individual, societal, survey design, and interviewer-level effects as factors relating to survey response. In writing about Web surveys, Vehovar et al. (2002) articulated a similar set of factors, replacing interviewer effects with technology environment. However, these current conceptions situate factors related to survey response apart from response theories, perhaps because of the difficulties in integrating factors relating to survey response with a response process model that could be applicable to all settings. It seems that a college student survey response model warrants the inclusion of factors relating to survey response, in particular the immediate organizational context as one of the factors related to survey response. Moving forward, researchers should work to develop a more complete and useful conceptual model for college student survey response.

Implications for Higher Education Research

The findings of this dissertation have numerous implications for higher education research. As, discussed in Chapters 1 and 2, despite the identification of declines in response rates in the field of higher education, there has been seemingly little concern

among higher education researchers about nonresponse rates, nonresponse bias and methods and measurement generally (Hutchinson & Lovell, 2004; Malaney, 2002b; Porter, 2009). In an analysis of articles in the three most prestigious higher education journals, Hutchinson and Lovell found that less than two-fifths of articles employing primary or secondary survey data included a discussion of potential nonresponse bias, even in surveys with very low response rates. To be fair, higher education is not alone in the failure to attend to these methodological concerns in journal articles. In a study of journal articles in political science, sociology and survey research published between 1998 and 2001, Smith (2002) found that large percentages of articles provided inadequate information about response rates. It seems quite possible that many survey researchers, both in higher education and in other social science disciplines, lack the methods training to be aware of the implications of nonresponse bias in their own studies (Hutchinson & Lovell, 2004; Malaney, 2002b). Perhaps more troubling is that reviewers and editors allow these studies to be published without discussing the potential limitations of nonresponse bias. The findings from this dissertation provide further impetus to strengthen research methods training in graduate education. Journal editors, reviewers, and researchers need to be cognizant of our developing understanding of nonresponse and, at a minimum, the need to report response rates, and suggest ways in which nonresponse bias may have influenced as study's results.

Because the vast majority of college student surveys should be considered organizational surveys, many of the necessary changes to survey climate need to be initiated at individual campuses. Obviously, it is at this level that campus satisfaction surveys, student services surveys, and other local efforts are conducted. Moreover, as

described in Chapter 2, many survey projects that higher education researchers may describe as "national" fundamentally are a collection of single institution surveys that use the same instrument. For example, the survey projects from the Indiana University Center for Postsecondary Research (e.g. NSSE, Beginning College Survey of Student Engagement, College Student Experience Questionnaire) and HERI (CIRP, Your First College Year Survey, Senior Survey) are conducted as survey projects for individual institutions. The same is true of more specialized projects like the National College Health Assessment. The dissertation's findings suggest that nonresponse bias may be particularly problematic in multi-institution studies like the NSSE. If organizational behaviors and climate are important to students' survey participation, surveys operate to select for students who have greater trust in their institution than the student body as a whole. In a multi-institution study, nonresponse bias may affect each institution's survey results differently.

Although the prospects of collecting valid survey data in college student surveys may seem bleak, the dissertation findings suggest several efforts that campuses could undertake to improve survey response. In general, these recommendations are centered around the idea of engendering climates at institutions that are conducive to students' survey participation.

Educate

Colleges and universities should attempt to educate students about survey research in general and how surveys are used to inform decision-making, practice, and policy. Institutions can describe the CIRP survey or other pre-college survey in materials sent to admitted students, discuss how results have been used in the past, and invite

students to look for presentation of the results on campus sometime during the fall semester. In addition, institutional researchers could offer sessions at new students' orientation during which staff members could share some survey results and explain how the institution makes use of these data. In these educational efforts, it is important to explain the nature of scientific surveys and random sampling, and to differentiate between referenda and surveys. Respected administrators should talk about how survey results are used to inform decision-making, evaluate programs, and serve as indicators of institutional success. This recommendation is not to suggest that campuses must reveal all of their inner workings. Rather, it is important that institutions take available opportunities to credit surveys as part of their processes whenever possible.

Share Results

As a general rule, institutions should share aggregate survey results with the student body. In addition, offices that conduct surveys should make themselves available for student questions. More importantly, institutions should show a pro-active interest in engaging students about survey data by exploring avenues for dissemination that are most likely to work on a particular campus. For example, at some institutions sending students email announcements with a link to aggregate results might be ideal. At others, publishing a sample of results in the student newspaper might serve to increase awareness and interest. For a particularly important survey, a forum at which students could ask questions might be the best way of communicating the importance of surveys and sharing the results.

Colleges and universities should share some concrete examples of how survey data to inform policy and practice. As an example, at my current institution I could

explain to students how the results from the college's CIRP freshman survey, combined with institutional participation data, provided evidence that there would be sufficient demand to expand a community engagement orientation trip, which led to the creation of a second trip. Moreover, by linking survey results to institutional data, we learned that the trip appeared to have an additive affect on students' subsequent community engagement participation, which led us to expand our outreach to attempt to recruit the widest range of students possible.

Survey Policies

Given the number of surveys students are invited to complete, colleges and universities should consider adopting survey policies. At some campuses, committees manage administrative survey requests in an effort to limit student surveys. As part of this work, students, faculty, and staff who propose surveys can often be directed to existing institutional data rather than conducting a survey. At other times, multiples research agendas can be combined into a single survey rather than several shorter instruments. These survey committees can also serve to coordinate the timing of surveys, manage the use of samples without replacement, and insist on sampling in general. Using samples when possible is another way of helping to make survey participation seem like a scarcer opportunity than it is at the present time and reduces the burden of survey requests on any one student. Moreover, institutions should inform students how to identify an official survey request by looking for particular information that should be in the email request. For example, in one of the focus groups, a student revealed that she had not believed the CIRP survey to be a legitimate survey effort when she received the request as an entering student. Advanced information about survey requests would help

alleviate this type of problem.

Conduct Surveys Sparingly

Related to the enactment of survey policies is the need for colleges and universities to limit the number of survey requests students receive. At some campuses with perennially low response rates, researchers should consider suspending survey research activity temporarily while working to foster a better survey climate. At all campuses, researchers should heed the recommendation of a focus group participant to use surveys "sparingly." As discussed earlier, students would be more likely to see survey participation as a scarce opportunity if fewer surveys were conducted, and, from a social exchange perspective, be more likely to complete the survey requests they do receive.

In order for institutions to limit the number of surveys they conduct, educational efforts about survey research methods, nonresponse and data quality need to be directed toward entities that request or demand data from institutions, for example regional accrediting organizations. If higher education policy makers and administrators are to make decisions based on survey data, it is vital that institutions be rewarded for valuing quality over quantity with regards to survey research data.

Students Voices

As part of the education process, institutions should communicate that surveys are not referenda. At the same time, researchers should provide space for students to describe any problems they faced when completing the survey. For example, focus group discussions revealed that some students routinely find the response options to be difficult to report on some surveys. Others have found that surveys on particular topics do not ask

the “important questions” suggesting that researchers or administrators may have different ideas about the importance of various aspects of the phenomena in question than do students.

Institutions should publically acknowledge other ways of collecting student data, for example focus groups. As my role as an institutional researcher, I recall receiving two particular email messages shortly after the launch of a senior survey. In the first message, a student remarked that the survey was quite comprehensive and provided him the opportunity to think back on his time at college – for him a very positive experience. He concluded that the survey asked questions that would represent his experience quite well. In the second email, a student wrote to ask to be removed from the sample. She had reviewed the survey and concluded that the items were inadequate at capturing her experience as a student. She indicated that she would be more than happy to write an essay describing her experience, what she perceived as positive, and what she saw as challenges. Although she did not say these words, I understood her to mean that her epistemological perspective was in conflict with a survey approach to understanding students’ experiences.

Outside of the research context, college and university administrators should make efforts to listen to students’ perspectives. Of course, administrators often must make decisions that are unpopular with a segment of the student body, but that does not mean that students’ viewpoints cannot be taken into consideration and that students can be respected as vital partners in the educational process. The idea that students be respected is commonsensical, however since a number of focus group participants reported that their institution does not care about students’ opinions or students in

general, I would be remiss to exclude this seemingly obvious practice as a formal recommendation.

Implications for Future Research

This dissertation suggests several areas for future research. The logistic regression analysis replicated some of the results found by Porter and Whitcomb (2005a), for example the effect of gender, social engagement and an enterprising personality type on survey completion. Additional studies should be conducted with populations at other types of institution, for example public institutions, universities, less selective institutions and institutions outside of the northeastern United States in order to ascertain whether or not student characteristics are related to survey taking behaviors in similar ways.

Appending survey on survey items to existing surveys is an inexpensive way to collect information about survey respondents and should be incorporated in more research studies. Even one or two items can provide researchers with information that could lead to important modifications to survey strategies at the institutional level. I plan to conduct a study with some of the items that I originally intended to ask but had to omit from the survey on survey study. I hope that these items will provide some additional insight into students' perceptions of how their institution makes use of survey data. In addition, I plan to analyze earlier data sets from the student assessment and research office to attempt to ascertain whether or not dining survey respondents accurately reported their previous survey taking experiences.

One lens by which to view students' response experience is through the idea of "students as customers" (Newson, 2004; Slaughter & Rhodes, 2004). Newson (2004) articulates this perspective as viewing students as "'receivers' of a service" (p. 230) in a

manner similar to that of a client and service provider in the general market place. The "students as customers" perspective may help frame student's interaction with college or university administration more so than in the classroom or around education generally speaking, therefore suggesting that it might have promise in considering survey nonresponse. Saunders (2011) points out that research is scant on the extent to which students view themselves as customers, but found in his study that nearly one-third of entering first-year students expressed a "students as customers" orientation. Since this perspective has similarities to an organizational perspective on survey response, future research should examine the extent to which a "students as customers" orientation relates to survey nonresponse.

Additional qualitative work should be conducted to explore the concepts articulated in this dissertation. Although a number of themes and ideas were echoed in multiple focus groups, I do not believe I achieved saturation with regard to students' ideas about institutional surveys. In addition, focus groups at other campuses with different populations (e.g. a women's college, a commuter institution, a community college) and with higher and lower typical response rates, could provide new insight into this phenomenon. Future qualitative studies could be coordinated with survey projects so that nonrespondents to a particular survey could be asked to reflect on their decision-making process with a common survey request.

The focus group findings suggest that college student surveys should be considered organizational surveys, but that leverage salience theory and social exchange theories may still operate to explain an individual's decision whether or not to participate in a survey. As I continue to pursue my research agenda, I anticipate developing and

testing theoretical models of college student survey response. There are a number of questions for such an endeavor. For example, should such a model be hierarchical with college-related factors situated within larger societal influences on survey response or do organizational norms supersede societal level factors? In thinking about this model of nonresponse, I need to tackle the idea of scientific objectivity with regards to college student surveys. If the college context is an important factor in college survey nonresponse and is inherently linked to survey topic, to what extent does the current survey phenomenon reflect the underlying principle of random sampling? I expect to work on these perplexing issues over the coming years.

Conclusion

At one point in time, Dillman's (1978) total design method, may have led some researchers to believe that following a strict set of established procedures was all that was necessary to obtain a high response rate, minimize nonresponse bias, and obtain valid survey data. Clearly, in the current environment, this is no longer the case. At present, probability survey studies are the only way that researchers can obtain generalizable information about students' attitudes and beliefs -- domains that do not appear in administrative data and cannot be captured except through asking people questions. If these data are important for research, evaluation, and assessment researchers must engage in further efforts to understand nonresponse bias and combat nonresponse. Determining how to collect quality survey data will be a challenge for researchers, and will likely require cooperation from multiple areas of an institution to engage in education about surveys, reduce survey burden, and work to build trust in the survey process. Ideally, college administrators would be transparent about how surveys are used on campus,

students would be educated about how survey research works and would see the aggregate results of surveys in which they participate, and students, faculty, researchers, and administrators would engage in dialogue about survey findings. Knowing that these efforts will not be possible at all institutions, researchers may need to develop more sophisticated statistical techniques to assess and compensate for nonresponse bias and devoted more resources to refusal conversion.

Overall, the results of this dissertation can be seen as portraying a bleak time for surveys of college students. Students receive numerous requests to participate in surveys. At times the instruments are poorly constructed or otherwise do not match students' experiences. In general, students do not see the results of surveys in which they have participated, perhaps contributing to the belief that survey results are not used on campuses. Many students seem to have fundamental misunderstandings of how surveys function and how they might be employed to inform policy. In the university focus groups, some discussion implied that, for a group of students, economic exchange has replaced social exchange as the basis for participating in surveys, a finding bolstered by the survey on surveys study. Furthermore, survey participants seem to be different than members of the general population, suggesting that nonresponse bias may be problematic in college student surveys. The replication study found that women respond more often than men, and that respondents appear to be different from nonrespondents in terms of personality and engagement.

However, the prospect of conducting college student surveys does not seem hopeless. Focus group findings suggest that that colleges and universities may be able to achieve greater response rates and reduce nonresponse bias in surveys. At each focus

group students reported instances of taking surveys because they believed their responses mattered. Often, this was in a situation with a smaller subunit of the institution or in circumstances in which students felt a close connection to a person or group. If institutions take the issue of nonresponse seriously, they may be able to effect changes that could result in increased student participation, decreased response bias, and a stronger educational partnership between students and their institutions.

APPENDIX A

RESEARCH QUESTIONS AND METHODS MAP

Research Question 1: Who responds and does not respond to surveys?

Primary Method: Replication study.
Secondary data sources: Survey questions on surveys. Focus groups.

Research Question 2: How do students experience the survey process?

Primary Methods: Survey on surveys, (e.g. How many surveys were you asked to complete this semester? How many of these surveys did you complete?), and Focus groups, (e.g. Recently, a survey was sent to all students about X, what did you think about when you saw the email invitation? Please describe your experience with surveys here at your college.)

Research Question 3: Should we treat surveys of college students as organizational surveys?

Primary Method: Focus groups, (e.g. How do you think the institution uses results from student surveys? Surveys for the institution usually indicate that your responses will be kept confidential, do you think this promise is kept?)

APPENDIX B

LOGISTIC REGRESSION STATISTICS FOR EACH REGRESSION MODEL

Model 1

	B	S.E.	Wald	Sig.	Exp(B)
Demographics					
Female	1.002	.205	24.016	<.001	2.725
Black	-.579	.385	2.234	.135	.562
Asian	-.321	.361	.794	.373	.725
Hispanic	.236	.359	.431	.512	1.266
Race unknown/other	.133	.271	.239	.625	1.142
Non-resident alien	-.178	.389	.210	.647	.837
First generation	-.410	.271	1.935	.164	.664
Financial aid status	.495	.227	4.751	.029	1.640
Academic Background					
Cumulative GPA	.940	.319	8.698	.003	2.561
Constant	-3.933	1.128	12.151	<.001	.020

Model 2

	B	S.E.	Wald	Sig.	Exp(B)
Demographics					
Female	1.003	.205	23.874	<.001	2.726
Black	-.542	.387	1.960	.162	.582
Asian	-.390	.363	.985	.321	.698
Hispanic	.256	.361	.503	.478	1.292
Race unknown/other	.127	.272	.218	.641	1.135
Non-resident alien	-.203	.390	.271	.603	.816
First generation	-.417	.296	1.989	.158	.659
Financial aid status	.480	.228	4.448	.035	1.617
Academic Background					
Cumulative GPA	.924	.321	8.296	.004	2.518
Past Survey Behavior					
CIRP Non-Participant	-.221	.296	.558	.455	.802
CIRP Missing Data	-.524	.337	2.415	.120	.592
Constant	-3.781	1.140	11.009	.001	.023

APPENDIX B, continued

Model 3

	B	S.E.	Wald	Sig.	Exp(B)
Demographics					
Female	1.062	.237	20.064	<.001	2.891
Black	-.371	.463	.643	.422	.690
Asian	-.033	.401	.007	.935	.968
Hispanic	.030	.413	.005	.942	1.030
Race unknown/other	.213	.445	.298	.585	1.237
Non-resident alien	.243	.310	.473	.492	1.275
First generation	-.741	.335	4.900	.027	.477
Financial aid status	.304	.263	1.345	.246	1.356
Academic Background					
Cumulative GPA	1.070	.378	8.010	.005	2.916
Constant	-4.229	1.357	9.714	.005	.015

Model 4

	B	S.E.	Wald	Sig.	Exp(B)
Demographics					
Female	.984	.256	14.776	.000	2.675
Black	-.298	.494	.363	.547	.743
Asian	.111	.420	.069	.793	1.117
Hispanic	.031	.432	.005	.943	1.031
Race unknown/other	.273	.324	.711	.399	1.314
Non-resident alien	.573	.475	1.454	.228	1.773
First generation	-.707	.352	4.045	.044	.493
Financial aid status	.048	.278	.029	.864	1.049
Academic Background					
Cumulative GPA	.789	.412	.3675	.055	2.201
Pre-College Engagement					
Engagement: Social	.428	.150	.8100	.004	1.535
Engagement: Studying	-.060	.127	.223	.636	.942
Personality Scales					
Investigative	.056	.144	.153	.696	1.058
Artistic	.038	.136	.079	.779	1.039
Social	-.101	.164	.374	.541	.904
Enterprising	-.407	.150	7.373	.007	.666
Past Survey Behavior					
CIRP ID Refusal	-.249	.246	1.029	.310	.780
Constant	-2.994	1.468	4.162	.041	.050

APPENDIX C

SURVEY ITEMS

Not including this survey, how many [institution name] surveys (surveys of offices or services or about your educational experiences) you have been asked to this semester?

Zero
One
Two
Three
Four
Five
Six or more

How many of these surveys did you complete?

Zero
One
Two
Three
Four
Five
Six or more

Please indicate if each of the following were a major reason, a minor reason or not a reason why you completed this survey.
(Response categories = A major reason, A minor reason, Not a reason)

You wanted to help the University gather information
Completing surveys from the University is part of what it means to be a [institution name] student
The topic sounded interesting
You like participating in surveys
You wanted to express your opinion
You wanted a break from studying or work
You wanted a chance to win an iPad2 (spring survey only)
You wanted a chance to win a $100 gift card to the University store (fall survey only)

APPENDIX D

SAMPLE FOCUS GROUP FLIER

Undergraduates Needed for Focus Group Discussion

My name is Ethan Kolek. I'm a doctoral student in higher education at UMass Amherst. I am seeking undergraduates to participate in a discussion about your experiences with surveys conducted by the University – for example surveys about Dining Services, OIT, and your experience as a student. I would like to hear what you think about these surveys and why you do or do not complete them.

I'll be holding two focus groups as part of my dissertation research. They will be held on Tuesday, February 28th and Wednesday, February 29th at 6:00 PM. I'm looking for about eight students to participate in each. The focus group will take 75 minutes -- the actual discussion will last about one hour. The focus groups will be held on the [institution name] campus.

Pizza and soda will be provided. As thanks for your time and participation, each focus group participant will receive $20 in gift certificates to local restaurants (Antonio's, Bueno Y Sano, or Fresh Side – your choice).

If you are interested in participating in a focus group, please contact me, at ekolek@educ.umass.edu. I'll respond to your message with a few questions to see if you are eligible to participate, and if one of the focus groups will work with your schedule.

WHEN: February 28th or February 29th 6:00 -7:15 PM (you only need to attend one).
WHAT: Focus Group Discussion about your experience with University Surveys. Have your opinions heard. Pizza and soda provided. Gift certificate "thank you."
CONTACT: Ethan Kolek, ekolek@educ.umass.edu for further information.

APPENDIX E

FOCUS GROUP INFORMED CONSENT LETTER

The Silent Majority: An Examination of Nonresponse in College Student Surveys

CONSENT FOR VOLUNTARY PARTICIPATION

I volunteer to participate in this qualitative study and understand that:

1. I will be part of a focus group conducted by Ethan Kolek using a loosely structured format consisting two main topic areas.

2. The topics I will be discussing address my views on issues related to how and why students do and do not respond to surveys they are sent by their institution. These include my experiences being asked to participate in survey projects by offices at my institution, and my perceptions of how my institution uses data it collects from student surveys.

3. The focus group will be recorded to facilitate analysis of the data.

4. My name will not be used, nor will I be identified personally in any way.

5. I may withdraw from part or all of this study at any time.

6. I understand that results from this research may be included in Ethan Kolek's doctoral dissertation and may also be included in manuscripts submitted to professional journals for publication and presented at meetings of professional associations.

7. Because of the small number of participants, approximately twelve to sixteen at this institution, I understand there is some risk that I may be identified as a participant of this study.

8. If you have any questions about the focus group, the methodology of the study, or any other area of the research project you can contact me at ekolek@amherst.edu or the chair of my committee, Elizabeth Williams, at Williams@educ.umass.edu.

_____	_____
Researchers' Signature	Participant's Signature
_____	_____
Date	Date

APPENDIX F

FOCUS GROUP INFORMATION FORM

Focus Group on Surveys

Class year:_____

Major(s):_____

What is your gender?

☐ Male
☐ Female
☐ Other

Which of the following best describes your race/ethnicity? (Check all that apply)

☐ African, African American or Black
☐ Asian, Asian American or Pacific Islander
☐ Latino(a), Hispanic, or Chicano(a)
☐ Native American, North or South American Indian, or Alaskan Native
☐ White or Caucasian
☐ Other_____

Are you an International Student?

☐ Yes
☐ No

Did you enter UMass as a:

☐ First year Student
☐Transfer Student

Do you live:
☐ On campus
☐ Off Campus

How did you hear about this focus group?_____

APPENDIX G

FOCUS GROUP PROTOCOL

Prospective participants will be asked to sign statements of informed consent when they arrive. Those who do so will be invited to help themselves to food and drink and to have a seat.

Distribute participant form. Explain purpose, and opt out.

Introduction

Thank you for agreeing to participate in this focus group about your experiences with surveys at [Institution Name]. My name is Ethan Kolek and I'll be facilitating the focus group tonight. This focus group is being conducted as part of my dissertation research. I've been conducting surveys of college students for about ten years, first at the University of Massachusetts and now at Amherst College.

Tonight, we're here to talk about your experiences with surveys that you've been asked to complete by offices at here at [Institution Name] -- whether you're someone who never takes surveys, sometimes participates or always participates. I have a list of questions that I'm going to ask, and I really hope we can have a conversation. Please listen to what each other has to say, and respond if you agree or disagree with what someone has said.

Please turn off your cell phones during the discussion.

Plan for 60 minutes.

I'm going to audio record the focus group. I don't anticipate that we'll be talking about anything particularly sensitive, but I want to emphasize that if anyone would like me to turn off the recording device at any time, please let me know, and I will be happy to do so. I'd like to remind everyone that your remarks tonight are confidential. I will likely quote from the focus group, but your name will not appear in the dissertation or any other publications – you'll be given a pseudonym. Does anyone have any questions?

APPENDIX G, continued

Questions.

Let's start with introductions. Please tell us your name, class year, major (if you have one), and where you're from.

- I'd like to begin by asking what comes to mind when I ask about surveys you get from the University?

- I'd like to hear an example of a recent time you were asked to complete a survey for the University. What was it about? Did you take it? What was that experience like? Others have similar experiences? Experiences that differ?

- Can you talk a little bit about the number of survey requests you receive from the University? - does it feel like a lot? Survey fatigue?

- What are your thoughts about survey incentives?

- How do you think the University uses the results from student surveys?

- Have you had experiences – or seen examples of offices at the University using student survey results?

- Some students feel connections to residence halls or majors, or other groups, I'm curious about how you would characterize your feelings toward the University as a whole.

- How does this relate to your feelings about University surveys?

TABLES

Table 2.1: Overall NSSE Response Rates and Number of Institutions

Method	2005	2006	2007	2008	2009	2010
Web Only	42% (167)	41% (252)	37% (320)	39% (463)	37% (412)	38% (486)
Paper Only	35% (172)	36% (119)	33% (81)	32% (67)	31% (39)	33% (26)
Web +*	39% (189)	39% (185)	35% (209)	35% (233)	34% (179)	35% (77)

*Fourth contact was paper survey sent to a subset of nonrespondents

Table 2.2: College Alcohol Study Historical Response Rates

	1993	1999	2001	2005
Response Rates	69%	59%	50.05%	27.9%*

*Web survey

Table 3.1: Select University and College Characteristics

	University	College
Undergraduate Enrollment	21,812	1,795
Race/Ethnicity	2% Nonresident Aliens 5% Hispanic/Latino 4% African American/Black 68% White Non-Hispanic 7% Asian 2% more than two race (non Hispanic) 12% Unknown race ethnicity	9% Nonresident Aliens 11% Hispanic/Latino 11% African American/Black 39% White Non-Hispanic 10% Asian 7% more than two race (non Hispanic) 13% Unknown race ethnicity
% Financial Aid	54% Grants/loans/work-study	60% Grants/Scholarship
Student to Faculty Ratio	18 to 1	8 to 1
% Live on Campus	61%	97%
Response Rates to Recent Surveys	Student Government Survey: 22% New Student Orientation Survey: 33% 2011 NSSE 28% First Year Students, 30% Seniors	2011 Senior Survey -- 61% 2011 Community Engagement Survey --22% Fall 2011 Dining Survey 54% Spring 2011 Dining Survey 52% Fall 2010 Dining Survey 69% 2008 NSSE 62%

Table 3.2 Disposition of Sample for Replication Study

	Full Sample (n=459)	CIRP Respondents (n=348)
Responded to Follow up	51.4% (236)	54.0% (188)
Did Not Respond To Follow up	48.6% (223)	46.0% (160)

Table 3.3 Logistic Regression Independent Variables

	Group 1: Demographic Variables
Gender	A single dummy-coded variable indicating students' gender (0=male, 1=female)
Race/ethnicity	Six dummy-coded variables indicating students' race/ethnicity White (omitted category) (0=not White, 1=White) Black (0=not Black, 1=Black) Asian (0=not Asian, 1=Asian) Hispanic (0=not Hispanic, 1 = Hispanic) Nonresident alien (0=not non-resident alien, 1=resident alien) Race unknown or other (0=race not unknown or not other, 1= race unknown or other)
First generation	A single dummy-coded variable indicating whether a student had no parents who graduated from a four-year institution (0=not first generation, 1=first generation)
Financial aid status	A single dummy-coded variable indicating if a student received financial aid (0=did not receive financial aid, 1=received financial aid)
	Group 2: Academic Background
Cumulative GPA	A continuous variable, adjusted to a standard 4 point scale, of students' cumulative grade point average at the time of the second survey.
	Group 3: Pre-College Engagement
Engagement Scale: Social	A continuous variable measuring pre-college engagement in social behaviors.
Engagement Scale: Studying	A continuous variable measuring pre-college engagement in studying behaviors.
	Group 4: Personality Measures
Personality: Investigative	A continuous variable measuring the extent to which students' incoming characteristics are associated with the Investigative Holland personality type
Personality: Social	A continuous variable measuring the extent to which students' incoming characteristics are associated with the Social Holland personality type
Personality: Artistic	A continuous variable measuring the extent to which students' incoming characteristics are associated with the Artistic Holland personality type
Personality: Enterprising	A continuous variable measuring the extent to which students' incoming characteristics are associated with the Enterprising Holland personality type
	Group 5: Past Survey Behavior
Participated in CIRP	A single dummy-coded variable indicating whether students had completed the CIRP survey (0=did not participate in CIRP survey, 1= participated in CIRP survey)
Missing Data CIRP	A single dummy-coded variable indicating whether students had missing data for any of the six composite measures or CIRP ID item and were therefore CIRP participants but who had not completed items in the CIRP survey necessary for analysis.
CIRP ID refusal	A single dummy-coded variable indicating whether students did not give the Higher Education Research Institute (HERI) permission to release their ID number back to the college for future study (0=gave permission for ID to be provided, 1= did not give permission for ID to be provided)

Table 3.4: Database Variables Included in Logistic Regression Models

Variable	Group	Data Base % (N=459)	CIRP Respondents (N=348)
Gender			
	Female	53.8%	54.6%
	Male	46.2%	45.4%
Race/Ethnicity			
	White	40.5%	40.8%
	Black	9.8%	8.6%
	Asian	9.6%	10.6%
	Hispanic	11.3%	10.3%
	Non Resident Alien	8.1%	8.3%
	Race Unknown/ Other	20.7%	21.3%
First generation			
	First Generation	15.5%	15.5%
	Not First Generation	84.5%	84.5%
Financial aid status			
	Received Financial Aid	67.3%	68.7%
	Did not receive financial aid	32.7%	31.3%
Cumulative GPA		Mean[1] = 3.43	Mean[2] =3.46
Completed CIRP			
	Participated in CIRP	86.1%%	100.0%
	Missing CIR Data	10.2%	0.0%
	Did Not Participate in CIRP	13.9%	0.0%

[1]Population Cumulative GPA: (N=459), Mean=3.4338, SD=.35134, Min =2.02, Max=4.00.

[2] CIRP Completers with no missing data Cumulative GPA: (n=348), Mean=3.4551, SD=.33951, Min=2.02, Max=4.00.

Table 3.5: CIRP Variables Included in Logistic Regression Models

Group	%	Mean	SD	Min	Max
Engagement Scale: Social (n=353)		-.008	1.003	-3.066	2.450
Engagement Scale: Studying (n=358)		.018	.998	-2.781	2.766
Personality Scale: Investigative (n=358)		.000	.999	-2.611	1.870
Personality Scale: Artistic (n=357)		-.020	.993	-1.753	2.901
Personality Scale: Social (n=355)		-.020	1.000	-2.341	2. 284
Personality Scale: Enterprising (n=355)		-.010	.992	-2.527	2.488
HERI Permission (n=358)					
Granted Permission for ID	59.5%				
Did Not Grant Permission for ID	40.5%				

Table 3.6: Engagement Measures

Scale	Items	Loadings	Mean	SD
Engagement: Social (ά =.696)				
	Frequency in high school: discussed religion	.609	2.34	.603
	Frequency in high school: Performed Volunteer Work	.604	2.35	.599
	Plans for college: participate in volunteer or community service work	.586	3.53	.606
	Plans for college: participate in student protests or demonstrations	.577	2.84	.828
	Hours in high school: volunteer work	.565	2.98	1.395
	Frequency in high school: discussed politics	.562	2.60	.595
	Hours in high school: student clubs/groups	.541	3.63	1.487
	Plans for college: participate in student government	.527	2.65	.815
	Frequency in High school: Participated in Political Demonstrations	.496	1.30	.510
	Frequency in high school: Voted in student election	.381	2.06	.690
Engagement: Studying (ά=.561)				
	Hours in high school: Talking with teachers outside of class	.724	2.96	1.039
	Hours in high school: Studying/homework	.648	5.60	1.469
	Frequency in high school: Asked a teacher for advice after class	.636	2.22	.607
	Frequency in high school: Studied with other students	.556	2.30	.59.
	Frequency in high school: Was a guest in a teacher's home	.527	1.42	.593

Table 3.7: Holland Personality Types

	Loadings	Mean	SD
Personality: Investigative (ά=.580)			
Rating: Academic ability	.772	4.59	.535
Rating: Mathematical ability	.715	3.96	.903
Rating: Self –confidence (intellectual)	.709	4.12	.754
Rating: Drive to achieve	.460	4.42	.704
Goal: Making a theoretical contribution to science	.420	1.68	.875
Personality: Artistic (ά=.816)			
Goal: Creating artistic work	.774	1.64	.899
Goal: Writing original works	.757	2.08	1.069
Rating: Artistic ability	.644	3.09	.996
Goal: Becoming accomplished in one of the performing arts	.620	1.73	.913
Goal: Developing a meaningful philosophy of life	.536	2.98	.947
Rating: Writing ability	.504	4.09	.812
Personality: Social (ά=.716)			
Goal: Participating in a community action program	.815	2.44	.899
Goal: Helping to promote racial understanding	.789	2.49	.932
Goal: Influencing social values	.733	2.51	.935
Goal: Helping others who are in difficulty	.724	3.08	.795
Goal: Becoming involved in programs to clean up the environment	.674	2.26	.814
Goal: Influencing the political structure	.605	2.19	.993
Personality: Enterprising (ά=.752)			
Goal: Having administrative responsibility for the work of others	.738	2.10	.890
Goal: Becoming successful in a business of my own	.683	2.10	.976
Goal: Becoming an authority in my field	.676	2.81	.891
Goal: Obtaining recognition from my colleagues for contributions to my field	.671	2.65	.881
Goal: Becoming very well off financially	.657	2.75	.891
Rating: Self-confidence (social)	.530	3.64	.930
Rating: Leadership ability	.461	4.12	.798

Table 3.8: Inter-Item Correlations for Model 1 and Model 2

	Responded to follow up survey	Female	Black	Asian	Hispanic	Non resident alien	Race unknown or other	First generation	Financial Aid Status	GPA	CIRP Nonmatch	Missing Data
Responded to Follow Up Survey	1											
Female	.245**	1										
Black	-.075	.144**	1									
Asian	-.009	.020	-.107*	1								
Hispanic	.031	.042	-.118*	-.116*	1							
Non resident alien	-.016	-.031	-.098*	-.096*	-.106*	1						
Race unknown or other	.045	-.001	-.168**	-.166**	-.183**	-.151**	1					
First generation	-.042	.082	.082	.024	.227**	.028	.034	1				
Financial Aid Status	.094*	.100*	.120**	.101*	.146**	.104*	.001	.272**	1			
GPA	.189**	.119*	-.258**	.121**	-.172**	-.003	.046	-.161**	-.032	1		
CIRP Nonmatch	-.049	-.031	.036	-.003	.055	.019	-.019	.002	-.028	-.103*	1	
Missing Data	-.074	-.004	.058	-.086	.015	-.047	-.013	-.005	-.040	-.034	-.136**	1

*$p < .05$ **$p < .01$ (2 – tailed)

Table 3.9: Inter-Item Correlations for Model 3 and Model 4

	Responded to follow up survey	Female	Black	Asian	Hispanic	Non resident alien	Race unknown or other	First generation	Financial Aid Status	GPA
Responded to Follow Up Survey	1									
Female	.236**	1								
Black	-.066	.157**	1							
Asian	.019	.052	-.106*	1						
Hispanic	-.027	.025	-.104	-.117*	1					
Non resident alien	.028	-.017	-.093	-.104	-.102	1				
Race unknown or other	.043	-.006	-.160**	-.179**	-.177**	-.157**	1			
First generation	-.098	.120*	.123*	.058	.141**	.014	.029	1		
Financial Aid Status	.036	.106*	.141**	.092	.148**	.069	-.012	.272**	1	
GPA	.193**	.053	-.264**	.106*	-.157**	.014	.042	-.120*	-.094	1
Engagement: Social	.162**	.091	.019	.027	.105*	.052	-.077	-.021	.136*	.066
Engagement: Studying	.042	.156**	.040	-.045	-.009	.035	.034	-.049	-.022	.005
Personality: Investigative	-.038	-.264**	-.193**	-.054	-.080	.159**	-.063	-.118*	-.038	.253**
Personality: Artistic	.079	.058	-.053	-.034	.056	.070	.076	-.016	.054	.144**
Personality: Social	.024	.130*	.088	.010	.121*	.123*	-.049	.089	.113*	-.067
Personality: Enterprising	-.178**	-.150**	.028	.006	.030	.238**	-.071	-.046	-.102	-.121*
CIRP ID Refusal	-.072	-.070	-.108*	.095	-.030	-.016	-.028	.002	-.099	.049

*$p < .05$ **$p < .01$ (2 – tailed)

Table 3.9, Continued

	Engagement: Social	Engagement: Studying	Personality Investigative	Personality Artistic	Personality Social	Personality Enterprising	CIRP ID Refusal
Responded to Follow Up Survey							
Female							
Black							
Asian							
Hispanic							
Non resident alien							
Race unknown or other							
First generation							
Financial Aid Status							
GPA							
Engagement: Social	1						
Engagement: Studying	.317**	1					
Personality: Investigative	.025	-.021	1				
Personality: Artistic	.238**	.002	.024	1			
Personality: Social	.567**	.236**	-.027	.414**	1		
Personality: Enterprising	.174**	.135*	.369**	.009	.300**	1	
CIRP ID Refusal	-.080	.015	.079	.107*	-.021	.010	1

*$p < .05$ **$p < .01$ (2 – tailed)

Table 3.10: Collinearity Diagnostics

Independent Variable	Model 1		Model 2		Model 3		Model 4	
	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF	Tolerance	VIF
Demographics								
Female	.934	1.071	.933	1.071	.944	1.060	.843	1.186
Black	.755	1.324	.753	1.328	.767	1.304	.735	1.360
Asian	.855	1.170	.849	1.178	.847	1.180	.813	1.230
Hispanic	.756	1.322	.753	1.327	.801	1.248	.773	1.294
Race unknown/other	.806	1.241	.805	1.242	.814	1.229	.785	1.274
Non-resident alien	.868	1.152	.865	1.155	.883	1.133	.810	1.235
First generation	.856	1.168	.856	1.168	.882	1.133	.863	1.159
Financial aid status	.857	1.166	.855	1.170	.866	1.154	.809	1.236
Academic Background								
Cumulative GPA	.844	1.185	.838	1.194	.876	1.142	.760	1.316
Pre-College Engagement								
Engagement: Social							.607	1.648
Engagement: Studying							.841	1.188
Personality Scales								
Investigative							.673	1.486
Artistic							.506	1.978
Social							.746	1.340
Enterprising							.647	1.545
Past Survey Behavior								
CIRP Non-Participant			.964	1.038				
CIRP Missing Data			.966	1.035				
CIRP ID Refusal							.935	1.069

Table 3.11: Logistic Regression Classification of Cases

	Base 1(N=459) Predicted		Model 1 Predicted		Model 2 Predicted	
	NonResp	Resp	NonResp	Resp	NonResp	Resp
Obs. Nonresp	0	223	140	83	135	88
Obs. Resp	0	236	80	156	78	158
% Correct	0%	100%	62.8%	66.1%	60.5%	66.9%
Total % Correct	51.4%		64.5%		63.8%	
	Base 2 (N=348) Predicted		**Model 3 Predicted**		**Model 4 Predicted**	
	NonResp	Resp	NonResp	Resp	NonResp	Resp
Obs. Nonresp	0	160	92	68	97	63
Obs. Resp	0	188	54	134	54	134
% Correct	0%	100%	57.5%	71.3%	60.6%	71.3%
Total % Correct	54.0%		64.9%		66.4%	

Table 3.12: Logistic Regression Results

	Model 1		Model 2		Model 3		Model 4	
	B	Exp(B)	B	Exp(B)	B	Exp(B)	B	Exp(B)
Demographics								
Female	1.002	2.725***	1.003	2.726***	1.062	2.891***	.984	2.675***
Black	-.579	.562	-.542	.582	-.371	.690	-.298	.743
Asian	-.321	.725	-.390	.698	-.033	.968	.111	1.117
Hispanic	.236	1.266	.256	1.292	.030	1.030	.031	1.031
Race unknown/other	.133	1.142	.127	1.135	.213	1.237	.324	1.314
Non-resident alien	-.178	.837	-.203	.816	.243	1.275	.573	1.773
First generation	-.410	.664	-.417	.659	-.741	.477*	-.707	.493*
Financial aid status	.495	1.640*	.480	1.617*	.304	1.356	.048	1.049
Academic Background								
Cumulative GPA	.940	2.561**	.924	2.518**	1.070	2.916**	.789	2.201
Pre-College Engagement								
Engagement: Social							.428	1.535**
Engagement: Studying							-.060	.942
Personality Scales								
Investigative							.056	1.058
Artistic							.038	1.039
Social							-.101	.904
Enterprising							-.407	.666**
Past Survey Behavior								
CIRP Non-Participant			-.221	.802				
CIRP Missing Data			-.524	.592				
CIRP ID Refusal							-.249	.780
N	459		459		348		348	
Cox & Snell Pseudo-R Square	.105		.110		.107		.151	
Nagelkerke Pseudo-R Square	.140		.147		.142		.202	
-2 Log likelihood	585.180		582.435		440.980		423.048	

Table 3.13: Example of Gender to Interpret Odds and Odds Ratios

	Original Sample N	Respondents to Follow up Survey	Response Rate	Odds of Responding	Odds Ratio
Women	247	155	62.8%	1.688	2.731
Men	212	81	38.2%	.618	

Table 4.1: Comparison of Respondent Demographics to Population Demographics

Demographic Characteristic		Spring Population (N=11,005)	Spring Respondents (n=524)	Fall Population (N=15,603)	Fall Respondents (n=650)
Gender					
	Female	49.8%	62.2%	47.8%	65.0%
	Male	50.2%	37.8%	52.2%	35.0%
Race/Ethnicity					
	White	66.0%	68.9%	68.3%	70.8%
	Asian	10.0%	10.7%	8.9%	10.2%
	American Indian	.2%	.2%	.2%	.3%
	Black	4.9%	2.3%	3.9%	2.1%
	Multiracial	2.3%	3.4%	2.1%	2.7%
	Hispanic	5.1%	3.8%	4.9%	3.0%
	No response	11.4%	10.7%	11.7%	10.8%
Entrance					
	Freshman	88.2%	88.7%	87.2%	92.7%
	Transfer	11.7%	11.3%	12.8%	7.3%
Varsity Sport					
	Athlete	3.4%	2.3%	3.7%	3.3%
	Not Athlete	96.6%	97.7%	96.3%	96.7%
Honors College					
	Honor's College student	13.1%	21.2%	13.4%	18.8%
	Not Honor's College student	86.9%	78.8%	86.6%	81.2%
Greek					
	Greek	2.7%	3.6%	3.4%	3.7%
	Not Greek	97.3%	96.4%	96.6%	96.4%
Class year					
	First Year	37.0%	29.6%	31.9%	36.3%
	Sophomore	33.6%	32.3%	29.2%	29.0%
	Junior	17.6%	22.7%	22.5%	18.0%
	Senior	11.9%	15.5%	16.3%	16.6%

Table 4.2: Excluding Current Survey, Number of Institutional Surveys Respondents Reported Being Asked to Complete during Current Semester

Number of Surveys	Measures of Central Tendency	Spring (n=524)	Fall (n=650)
Zero		5.2%	24.4%
		(27)	(160)
One		13.2%	17.7%
		(69)	(116)
Two		22.1%	25.3%
		(116)	(166)
Three		22.3%	15.2%
		(117)	(100)
Four		13.4%	6.5%
		(78)	(43)
Five		6.7%	2.3%
		(35)	(15)
Six or more		15.6%	8.7%
		(82)	(57)
Total		100.0%	100.0%
		(524)	(657)
	Mean	3.1126	2.0350
	Median	3	2
	STD	1.74051	1.77817

Table 4.3: Students' Self-Reported Response Rates

	Spring (n=524)	Fall (n=650)
Mean Response Rate	80.9%***	69.4%
Median/Mode	100%	100%
Percentage responding to all survey requests	62.8%	53.6%
STD	.28732	.37124

*** p<.001

Table 4.4: Number of Surveys Students Reported Completing by Number of Surveys Students Reported Being Asked to Complete

Spring (n=524)		Number of Survey Requests						
	Number of Surveys Completed	Zero	One	Two	Three	Four	Five	Six or more
	Zero	100.0%	10.1%	3.4%	3.4%	2.6%	0.0%	4.9%
	One		89.9%	20.7%	13.7%	5.1%	2.9%	7.3%
	Two			75.9%	18.8%	19.2%	17.1%	6.1%
	Three				64.1%	21.8%	20.0%	14.6%
	Four					51.3%	28.6%	17.1%
	Five						31.4%	6.1%
	Six or more							43.9%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Fall (n=650)		Number of Survey Requests						
	Number of Surveys Completed	Zero	One	Two	Three	Four	Five	Six or more
	Zero	100.0%	21.7%	13.9%	14.0%	7.0%	0.0%	3.5%
	One		78.3%	29.5%	22.0%	14.0%	20.0%	8.8%
	Two			56.6%	17.0%	25.6%	46.7%	19.3%
	Three				47.0%	11.6%	6.7%	22.8%
	Four					41.9%	6.7%	17.5%
	Five						20.0%	3.5%
	Six or more							24.6%
	Total	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%

Table 4.5: Reasons for Participation in Current Survey

Survey Item	Spring (n=524)	Fall (n=650)
You wanted to help the University gather information		
A major reason	59.4% (306)	57.2% (372)
A minor reason	32.0% (165)	34.5% (224)
Not a reason	8.5% (44)	8.3% (54)
Completing surveys from the University is part of what it means to be a [institutional name] student.		
A major reason	28.3% (145)	27.2% (177)
A minor reason	35.9% (184)	39.1% (254)
Not a reason	35.9% (184)	33.7% (219)
The topic sounded interesting		
A major reason	29.0% (149)	36.0%* (233)
A minor reason	41.4% (213)	40.1% (260)
Not a reason	29.6% (152)	23.9% (155)
You like participating in surveys		
A major reason	30.6% (158)	24.4% (158)
A minor reason	35.5% (183)	38.8% (251)
Not a reason	33.9% (175)	36.8% (238)
You wanted to express your opinion		
A major reason	57.8% (298)	56.5% (366)
A minor reason	31.4% (162)	34.1% (221)
Not a reason	10.9% (56)	9.4% (61)
You wanted a break from studying or work.		
A major reason	36.5% (188)	29.0% (188)
A minor reason	33.6% (173)	34.4% (223)
Not a reason	29.9% (154)	36.6% (237)

Table 4.5, Continued

Survey Item	Spring (n=524)	Fall (n=650)
You wanted a chance to win an iPad2 (S11)/ You wanted a chance to win a $100 gift card to the University (F11)		
A major reason	63.4% (328)	68.6% (446)
A minor reason	27.3% (141)	23.7% (154)
Not a reason	9.3% (48)	7.7% (50)

Table 4.6: Gender Differences in Self-Reported Motivation

Survey Item	Spring		Fall	
	Women	Men	Women	Men
You like participating in surveys				
Major reason	35.0%* (112)	24.2% (46)	27.0%* (112)	19.2% (43)
Minor reason	33.4% (107)	38.9% (74)	39.3% (163)	37.9% (85)
Not a reason	31.6% (101)	36.8% (70)	33.7% (140)	42.9% (96)
You wanted to express your opinion				
Major reason	62.3%* (200)	50.3% (95)		
Minor reason	28.0% (90)	37.6% (71)		
Not a reason	9.7% (31)	12.2% (23)		
You wanted to help the University gather information				
Major reason	65.9%*** (211)	49.2% (93)		
Minor reason	27.2% (87)	40.2% (76)		
Not a reason	6.9% (22)	10.6% (20)		
You wanted a break from studying or work				
Major reason			30.9% (128)	25.2% (57)
Minor reason			36.5% (151)	31.0% (70)
Not a reason			32.6%* (135)	43.8% (226)

*p ≤ .05, ***p ≤ .001

Table 4.7: Spring Inter-Item Correlations: Motivations to Complete Survey

	You wanted to help the University gather information	Completing surveys from the University is part of what it means to be a [Institution Name] student.	The topic sounded interesting.	You like participating in surveys.	You wanted to express your opinion.	You wanted a break from studying or work.	You wanted a chance to win an iPad2.
You wanted to help the University gather information	1.000						
Completing surveys from the University is part of what it means to be a [Institution Name] student.	.402***	1.000					
The topic sounded interesting.	.344***	.473***	1.000				
You like participating in surveys.	.210***	.334***	.490***	1.000			
You wanted to express your opinion.	.458***	.281***	.394***	.397***	1.000		
You wanted a break from studying or work.	.038	.181***	.242***	.317***	.108*	1.000	
You wanted a chance to win an iPad2.	-.022	.083	.173***	.194***	.038	.326***	1.000

***p<.001

Table 4.8 Fall Inter-Item Correlations: Motivations to Complete Survey

	You wanted to help the University gather information.	Completing surveys from the University is part of what it means to be a [Institution Name] student.	The topic sounded interesting.	You like participating in surveys.	You wanted to express your opinion.	You wanted a break from studying or work.	You wanted a chance to win a $100 gift card to the University store.
You wanted to help the University gather information.	1.000						
Completing surveys from the University is part of what it means to be a [Institution Name] student.	.455***	1.000					
The topic sounded interesting.	.386***	.410***	1.000				
You like participating in surveys.	.305***	.359***	.495***	1.000			
You wanted to express your opinion.	.390***	.221***	.310***	.269***	1.000		
You wanted a break from studying or work.	.077	.190***	.180***	.292***	.067	1.000	
You wanted a chance to win a $100 gift card to the University store.	.011	.016	.005	.051	-.002	.250***	1.000

***p<.001

Table 5.1: Focus Group Participant Characteristics

	University1 (N=10)	University2 (N=5)	College1 (N=7)	College2 (N=9)
Gender				
Men	7	2	4	1
Women	3	3	3	8
Class Year				
First Year	3	2	0	5
Sophomore	4	1	3	2
Junior	0	3	1	2
Senior	3	0	2	0
Race/Ethnicity				
African, African-American or Black	0	0	0	5
Asian, Asian American or Pacific Islander	1	0	1	0
Latino(a), Hispanic, or Chicano(a)	0	0	3	3
Native American, North or South American Indian, or Alaskan Native	0	0	0	0
White or Caucasian	9	5	4	3
Other	0	0	1	0
Number marking more than one race/ethnicity	0	0	2	2
International Student				
Yes	0	0	0	2
No	10	5	7	7
Enter Inst as				
First year student	7	4	6	9
Transfer	3	1	1	0
Residence				
On campus	6	4	6	9
Off Campus	4	0	1	0

Table 5.2 Majors of Focus Group Participants

University1 (N=10)	University2 (N=5)	College1 (N=7)	College2 (N=9)
English (2), Finance, History Journalism, Marketing, ‘ Music, Psychology (2), Spanish, Theater, Self-designed, Undeclared (2).	Mechanical Engineering, Psychology, Sociology, Social Thought and Political Economy Self-designed.	Economics, Environmental Studies (2), Geology(2), Law, Jurisprudence and Social Thought (2), Political Science, Psychology.	French, History (2), Law, Jurisprudence and Social Thought, Mathematics, Political Science, Psychology (3), Undeclared (3).

BIBLIOGRAPHY

AAPOR Cell Phone Task Force (2010). New considerations for survey researchers when planning and conducting RDD telephone surveys in the U.S. with respondents reached via cell phone numbers. American Association of Public Opinion Research. http://www.aapor.org/Cell_Phone_Task_Force_Report.htm

Adams, L. L. M., & Gale, D. (1982). Solving the quandary between questionnaire length and response rate in educational research. *Research in Higher Education, 17*, 231-240.

Agresti, A. (2007). An introduction to categorical data analysis (2nd ed.). Hoboken, NJ: John Wiley & Sons, Inc.

Allison, P. D. (1999). Multiple regression: A primer. Thousand Oaks, CA: Pine Forge Press.

The American College Health Association. (2007). American College Health Association National College Health Assessment 2006 reference group data report (abridged). *Journal of American College Health, 55*, 195-206.

The American College Health Association. (2008). American College Health Association -National College Health Assessment 2007 reference group data report (abridged). *Journal of American College Health, 56*, 469-479.

The American College Health Association (2009). American College Health National College Health Assessment II Reference Group Executive Summary Fall 2009. Retrieved from http://www.acha-ncha.org/docs/ACHA-NCHA_Reference_Group_ExecutiveSummary_ Fall2009.pdf

Andreasen, A. R. (1970). Personalizing mail questionnaire correspondence. *Public Opinion Quarterly, 34*, 273-277.

Armstrong, J.S. (1975). Monetary incentives in mail surveys. *Public Opinion Quarterly, 39*, 111-116.

Armstrong, J.S., & Lusk, E.J. (1987). Return postage in mail surveys: A meta-analysis., 233-248.

Asiu, B. W., Antons, C. M., & Fultz, M. L. (1998). Undergraduate perceptions of survey participation: Improving response rates and validity. Paper presented at the Association for Institutional Research Annual Forum, Minneapolis, MN.

Astin, A. W. (1970b). The methodology of research on college impact, part two. *Sociology of Education, 43*, 451-458.

Barr, C. D., Spitzmuller, C., & Stuebing, K. K. (2008). Too stressed out to participate? Examining the relationship between stressors and survey response behavior. *Journal of Occupational Health Psychology, 13*, 232-243.

Bates, N. Dahlhamer, J. & Singer, E. (2008). Privacy concerns, too busy, or just not interested: Using doorstep concerns to predict survey nonresponse. *Journal of Official Statistics, 24*, 591-612.

Bergman, L. R. & Brage, R. (2008). Survey experiences and later survey attitudes, intentions, and behavior. *Journal of Official Statistics, 24*, 99-113.

Blumberg, H. H., Fuller, C., & Hare, A. P. (1974). Response rates in postal surveys. *Public Opinion Quarterly, 38*, 13-123.

Bradburn, N. M., & Sudman, S. (1988). *Polls and surveys: Understanding what they tell us.* Jossey-Bass: San Francisco.

Brehm, J. (1993). *The phantom respondents: Opinion surveys and political representation*. Ann Arbor, MI: University of Michigan Press.

Brennan, M., & Charbonneau, J. (2009). Improving mail survey response rates using chocolate and replacement questionnaires. *Public Opinion Quarterly, 73*, 368-378.

Britton, J. H., & Britton, J. O. (1951). Factors in the return of questionnaires mailed to older persons. *Journal of Applied Psychology, 35*, 57-60.

Bosnjak, M., Tuten, T. L., & Wittmann, W. W. (2005). Unit (non)response in web-based access panel surveys: An extended planned-behavior approach. *Psychology & Marketing, 22*, 489-505.

Callegero, M. (2010). Do you know which device your respondent has used to take your online survey? *Survey Practice, December.* www.surveypractice.org.

Campanelli, P., & O'Muircheartaigh, C. (1999). Interviews, interviewer continuity, and panel survey nonresponse. *Quality & Quantity, 33*, 59-76.

Carini, R. M., Hayek, J. C., Kuh, G. D., Kennedy, J. M., & Ouimet, J. A. (2003). College student responses to Web and paper surveys: Does mode matter? *Research in Higher Education, 44*, 1-19.

Church, A. H. (1993). Estimating the effect of incentives on mail survey response rates: A meta-analysis. *Public Opinion Quarterly, 57*, 62-79.

Cohen, G., & Duffy, J. C. (2002). Are nonrespondents to health surveys less healthy than respondents? *Journal of Official Statistics, 18*, 13-23.

Conrad, F. G., Brown, N.R., & Cashman, E.R. (1998). Strategies for estimating behavioural frequency in survey interviews. *Memory, 6*, 339-366.

Cook, C., Heath, F., & Thompson, R. L., (2000). A meta-analysis of response rates in Web or Internet-based surveys. *Educational and Psychological Measurement, 60*, 821-836.

Couper, M. P. (2000). Web surveys: A review of issues and approaches. *Public Opinion Quarterly, 64*, 464-494.

Cowger, (1984). Statistical significance tests: Scientific ritualism or scientific method? *Social Service Review, 58*, 358-372.

Cowger, C.D. (1985). Author's reply. *Social Service Review, 59*, 520-522.

Crawford, S. D., Couper, M. P., & Lamias, M. J. (2001). Web surveys: Perceptions of burden. *Social Science Computer Review, 19*, 146-162.

Creswell, J. W. (1998). *Qualitative inquiry and research design: Choosing among five traditions.* Thousand Oaks, CA: Sage Publications.

Curtin, R., Presser, S., & Singer, E. (2005). Changes in telephone survey nonresponse over the past quarter century. *Public Opinion Quarterly, 69*, 87-98.

de Leeuw, E., & de Heer, Wim (2002) Tends in household survey nonresponse: A longitudinal and international comparison. In R. M. Groves, D. A. Dillman, J. L. Eltinge, & R. J. A. Little (Eds.), *Survey nonresponse* (pp. 41-54). New York: John Wiley & Sons, Inc.

Deming, W. E. (1944). On errors in surveys. *American Sociological Review, 9*, 359-369.

Dey, E. (1997). Working with low survey response rates: The efficacy of weighting adjustments. *Research in Higher Education, 38*, 215-227.

Dillman, D. A. (1972). Increasing Mail Questionnaire Response for Large Samples of the General Public. *Public Opinion Quarterly, 35*, 254-257.

Dillman, D. A. (1978). Mail and telephone surveys: The total design method. New York: John Wiles & Sons.

Dillman, D. A. (1991). The design and administration of mail surveys. *American Review of Sociology, 17*, 225-249.

Dillman, D. A. (2000). *Mail and Internet surveys: The tailored design method*. New York: John Wiley & Sons, Inc.

Dillman, D. A. (2002). Presidential address: Navigating the rapids of change: Some observations on survey methodology in the early twenty-first century. *Public Opinion Quarterly, 66*, 473-494.

Dillman, D.A. (2007). *Mail and Internet surveys: The tailored design method* (2nd ed.). Hoboken, N.J.: John Wiley & Sons, Inc.

Dillman, D. A., Eltinge, J. L., Groves, R. M., & Little, R. J. A. (2002). Survey nonresponse in design, data collection, and analysis. In R. M. Groves, D. A. Dillman, J. L. Eltinge, & R. J. A. Little (Eds.), *Survey nonresponse* (pp. 3-26). New York: John Wiley & Sons, Inc.

Dillman, D. A., Sinclair, M. D., & Clark, J. R. (1993). Effects of questionnaire length, respondent friendly design, and a difficult question on response rates for occupant-addressed census mail surveys. Public Opinion Quarterly, 57, 289-304.

Dillman, D.A., Smith, J.D., & Christian, L.M. (2009). *Internet, mail and mixed-mode surveys: The tailored design method (3rd ed.)*. Hoboken, NJ.: John Wiley & Sons, Inc.

Durand, C., Blais, A., & Vachon, S. (2002). Accounting for biases in election surveys: The case of the 1998 Quebec election. *Journal of Official Statistics, 18*, 25-44.

Edgerton, H. A., Britt, S. H., & Norman, R. D. (1947). Objective differences among various types of respondents to a mailed questionnaire. *American Sociological Review, 12*, 435-444.

Eisinger, R. A., Janicki, W. P., Stevenson, R. L., & Thompson, W. L. (1974). Increasing returns in international mail surveys. Public Opinion Quarterly, 38, 124-130.

Ellis, R. A., Endo, C. M., & Armer, J. M. (1970). The use of potential nonrespondents for studying nonresponse bias. *The Pacific Sociological Review, 13*, 103-109.

Etter, J-F, Perneger, T. V., & Rougemont, A. (1996). Does sponsorship matter in patient satisfaction surveys? A randomized trial. *Medical Care, 34*, 327-335.

Ford, R. N. & Zeisel, H. (1949). Bias in mail surveys cannot be controlled in one mailing. *Public Opinion Quarterly, 13*, 495-501.

Fowler, Jr., F. J. (2009). *Survey research methods* (4th ed). Los Angeles: Sage Publications

Fox, R. J., Crask, M. R., & Kim, J. (1988). Mail survey response rate: A meta-analysis of selected techniques for inducing response. *Public Opinion Quarterly, 52,* 467-491.

Frankel, M.R., & Frankel, L.R. (1987). Fifty years of survey sampling in the United States. *Public Opinion Quarterly, 51, Part 2: Supplement 50th Anniversary Issue*, S127-S138.

Fricker, S., Galesic, M., Tourangeau, R. & Yan, T. (2005). An experimental comparison of Web and telephone surveys. *Public Opinion Quarterly, 69,* 370-392.

Fuqua, D. R., Hartman, B. W., & Brown, D. F. (1982). Survey research in higher education. *Research in Higher Education, 17,* 69-80.

Galea, S. & Tracy, M. (2007). Participation rates in epidemiologic studies. *Annals of Epidemiology, 17,* 643-653.

Galesic, M., & Bosnjak, M. (2009). Effects of questionnaire length on participation and indicators of response quality in a web survey. *Public Opinion Quarterly, 73,* 349-360.

Gallagher, P. M., Fowler, F. J., Jr., & Stringfellow, V. L. (2005). The nature of nonresponse in a Medicaid survey: Causes and consequences. *Journal of Official Statistics, 21,* 73-87.

Gallup, G., & Rae, S. F. (1940). *The pulse of democracy: The public-opinion poll and how it works*. New York: Simon and Shuster.

Goldstein, K.M. & Jennings, M.K. (2002). The effect of advance letters on cooperation in a list sample telephone survey. *Public Opinion Quarterly, 66,* 608-617.

Goritz, A. S. (2006). Incentives in Web studies: Methodological issues and a review. *International Journal of Internet Science, 1,* 58-70.

Goyder, J. C. (1982). Further evidence on factors affecting response rates to mailed questionnaires. *American Sociological Review, 47,* 550-553.

Goyder, J. (1985). Face-to-face interviews and mailed questionnaires: The net difference in response rate. *Public Opinion Quarterly, 49,* 234-252.

Goyder, J. (1986). Surveys on surveys: Limitations and potentialities. *Public Opinion Quarterly, 50,* 27-41.

Goyder, J. (1987). *The silent minority: Nonrespondents on sample surveys*. Cambridge, UK: Polity Press.

Goyder, J., Boyer, L., & Martinelli, G. (2006). Integrating exchange and heuristic theories of survey nonresponse*. *Bulletin de méthodologie sociologique*, 92. Retrieved from: http://bms.revues.org/index554.html.

Goyder, J., Warriner, K., & Miller, S. (2002). Evaluating socio-economic status (SES) bias in survey nonresponse. *Journal of Official Statistics, 18*, 1-11.

Greer, T. V., Chuchinprakarn, N., & Seshadri, S. (2000). Likelihood of participating in mail survey research: Business respondents' perspectives. *Industrial Marketing Management, 18*, 97-109.

Greer, T. V., & Lohtia, R. (1994). Effects of source and paper color on response rates in mail surveys. *Industrial Marketing Management, 23*, 47-54

Groves, R. M. (1989). *Survey errors and survey costs*. New York: John Wiley & Sons.

Groves, R. M. (2006). Nonresponse rates and nonresponse bias in household surveys. *Public Opinion Quarterly, 70*, 646-675.

Groves, R.M. (2010, April 28). Prepared remarks of Robert M. Groves, Director U.S.Census Bureau: *2010 Census: Final Mail Participation Rates: Thank You, America!* Prepared for the Operational Press Briefing at the National Press Club.

Groves, R. M., Cialdini, R. B, & Couper, M. P. (1992). Understanding the decision to participate in a survey. *Public Opinion Quarterly, 56*, 475-495.

Groves, R. M., & Couper, M. P. (1998). *Nonresponse in household interview surveys*. New York: John Wiley & Sons.

Groves, R.M., Couper, M. P., Presser, S., Singer, E., Tourangeau, R., Acosta, G.P., & Nelson, N. (2006). Experiments in producing nonresponse bias. *Public Opinion Quarterly, 70*, 720-736.

Groves, R. M., Fowler, F. J., Couper, M. P., Lepkowski, J. M., Singer, E. & Tourangeau, R. (2004). *Survey methodology*. Hoboken, NJ: John Wiley & Sons.

Groves, R. M., Fowler, F. J., Couper, M. P., Lepkowski, J. M., Singer, E. & Tourangeau, R. (2009). *Survey methodology* (2nd ed.). Hoboken, NJ: John Wiley & Sons.

Groves, R. M., & Peytcheva, E. (2008). The impact of nonresponse rates on nonresponse bias: A meta-analysis. *Public Opinion Quarterly, 72*, 167-189.

Groves, R. M., Presser, S., & Dipko, S. (2004). The role of topic interest in survey participation decisions. *Public Opinion Quarterly, 68*, 2-31.

Groves, R. M., Singer, E., & Corning, A. (2000). Leverage-saliency theory of survey participation: Description and an illustration. *Public Opinion Quarterly, 64*, 299-308.

Hauser, R. M. (2005). Survey response in the long run: The Wisconsin longitudinal study. *Field Methods, 17*, 3-29.

Hawkins, D. I. (1979). The impact of sponsor identification and direct disclosure of respondent rights on the quantity and quality of mail survey data. *Journal of Business, 52*, 577-590.

Heberlein, T. A., & Baumgartner, R. (1978). Factors affecting response rates to mailed questionnaire: A quantitative analysis of the published literature. *American Sociological Review, 43*, 447-462.

Heerwegh, D. (2005). Effects of personal salutations in e-mail invitations to participate in a Web survey. *Public Opinion Quarterly, 69*, 588-598.

Heerwegh, D., & Loosveldt, G. (2006). An experimental study on the effects of personalization, survey length statements, progress indicators, and survey sponsor logos in web surveys. *Journal of Official Statistics, 22*, 191-210.

Henley, J. R. Jr. (1976). Response rate to mail questionnaires with a return deadline. *Public Opinion Quarterly, 40*, 370-373.

Hesseldenz, J. S. (1976). Determining validity and identifying nonresponse bias in a survey requesting income data. *Research in Higher Education, 5*, 179-191. Higher Education Research Institute (n.d.). Retrieved October 30th, 2010 from www.heri.ucla.edu/cirpoverview.php

Hinkin, T. R., & Holtom, B.C. (2009). Response rates and sample representativeness: Identifying contextual response drivers. In D.A. Buchanan & A. Bryman (Eds.) *The Sage Handbook of Organizational Research Methods* (pp. 451-464), Washington, D.C.: Sage Publications.

Horowitz, J. L., & Sedlacek, W. E. (1974). Initial returns on mail questionnaires: A literature review and research note. *Research in Higher Education, 2*, 361-367.

House, J. S., Gerber, W., & McMichael, A. J. (1977). Increasing mail questionnaire response: A controlled replication and extension. *Public Opinion Quarterly, 41*, 95-99.

Houtkoop-Steenstra, H., & van den Bergh, H. (2000). Effects of introductions in large-scale telephone survey interviews. *Sociological Methods & Research, 28*, 281-300.

Hox, J., & de Leeuw, E. (2002) The influence of interviewers' attitudes and behavior on household survey nonresponse: An international comparison. In R. M. Groves, D. A. Dillman, J. L. Eltinge, & R. J. A. Little (Eds.), *Survey nonresponse* (pp. 41-54). New York: John Wiley & Sons, Inc.

Hox, J., de Leeuw, E., & Vorst, H. (1995). Survey participation as reasoned action: A behavioural paradigm for survey nonresponse? *Bulletin de Methodologie Sociologique, 48*, 52-67.

Hox, J., de Leeuw, E., & Vorst, H. (1996). A reasoned action explanation for survey nonresponse. In S. Laaksonen (Ed.) *International Perspectives on Nonresponse* (pp. 101-110). Retrieved November 5, 2009 from http://igitur-archive.library.uu.nl/fss/2007-115-200936/hox_96_areasoned action explanation for survey.pdf

Hurtado, S., Sax, L.J., Saenez, V., Harper, C.E., Oseguera, L., Curley, J., Lopez, L., Wolf, D., Arellano, L. (2007) Findings from the 2005 administration of the Your First College Year (YFCY): National aggregates. Higher Education Research Institute. http://www.heri.ucla.edu/PDFs/2005_YFCY_REPORT_FINAL.pdf

Hutchinson, S. R., & Lovell, C. D. (2004). A review of methodological characteristics of research published in key journals in higher education: Implications for graduate research training. *Research in Higher Education, 45*, 383-403.

Hutchison, J., Tollefson, N., & Wigington, H. (1987). Response bias in college freshmen's responses to mail surveys. *Research in Higher Education, 26,* 99-106.

Jans, M., & Roman, A. (2007). National response rates for surveys of college students: Institutional, regional, and design factors. Paper presented at the 62nd annual conference of the American Association for Public Opinion Research, Anaheim, CA.

Johnson, R. B., (1997). Examining the validity structure of qualitative research. *Education, 118*, 282-292

Johnson, T. P., Lee, G., & Cho, Y. I. (2010). Examining the association between cultural environments and survey nonresponse. *Survey Practice*, June. Retrieved from surveypractice.org/2010/06/22cultural-environments

Johnson, T. P., O'Rourke, D., Burris, J. & Owens, L. (2002). Culture and survey non-response. In R. M. Groves, D. A. Dillman, J. L. Eltinge, & R. J. A. Little (Eds.), *Survey nonresponse* (pp. 55-70). New York: John Wiley & Sons, Inc.

Jones, S.R., & Hill, K.E. (2003). Understanding patterns of commitment: Student motivation for community service involvement. *The Journal of Higher Education, 74*, 516-539.

Jones, W. H., & Linda, G. (1978). Multiple criteria effects in a mail survey experiment. *Journal of Marketing Research, 15*, 280-284.

Kaldenberg, D. O., Koenig, H. F., & Becker, B. W. (1994). Mail survey response rate patterns in a population of the elderly: Does response deteriorate with age? *Public Opinion Quarterly, 58*, 68-76.

Kaplowitz, M. D., Hadlock, T. D., & Levine, R. (2004). A comparison of Web and mail survey response rates. *Public Opinion Quarterly, 68*, 94-101.

Kawash, M. B., & Aleamoni, L.M. (1971). Effect of personal signature on the initial rate of return of a mailed questionnaire. *Journal of Applied Psychology, 55,* 589-592.

Keeter, S., Kennedy, C., Dimock, M., Best, J., & Craighill, P. (2006). Gauging the impact of growing nonresponse on estimates from a national RDD telephone survey. *Public Opinion Quarterly, 70*, 759-779.

Keeter, S., Miller, C., Kohut, A., Groves, R. M., & Presser, S. (2000). Consequences of reducing nonresponse in a national telephone survey. *Public Opinion Quarterly, 64*, 125-148.

Kolek, E. A. (2006). Examining empirical articles in the Journal of College Student Development: A pilot study. Unpublished Manuscript, University of Massachusetts Amherst.

Krathwohl, D. R. (1998). *Methods of educational & social science research: An integrated approach* (2nd ed.). Reading, MA: Addison-Wesley Educational Publishers Inc.

Krosnick, J. A. (1999). Survey research. *Annual Review of Psychology, 50*, 537-567.

Krysan, M., Schuman, H., Scott, L. J., & Beatty, P. (1994). Response rates and response content in mail versus face-to-face surveys. *Public Opinion Quarterly, 58,* 381-399.

Kuh, G. D. (2001). Assessing What Really Matters to Student Learning: Inside the National Survey of Student Engagement. *Change, 33*(3), 10-17, 66.

Kwak, N., & Radler, B. (2002). A comparison between mail and web surveys: Response pattern, respondent profile, and data quality. *Journal of Official Statistics, 18*, 257-273.

Laguilles, J. S., Williams, E. A., & Saunders, D. B. (2011). Can lottery incentives boost web survey response rates? Findings from four experiments. *Research in Higher Education, 52,* 537-553.

Leung, D. Y. P., & Kember, D. (2005). Comparability of data gathered from evaluation questionnaires on paper and through the Internet. *Research in Higher Education, 46*, 571-
591.

Lin, I-F, & Schaeffer, N.C. (1995). Using survey participants to estimate the impact of nonparticipation. *Public Opinion Quarterly, 59*, 236-258.

Link, M. W., & Mokdad, A. (2005). Advance letters as a means of improving respondent cooperation in random digit dial studies: A multi-state experiment. *Public Opinion Quarterly, 69*, 572-587.

Link, M. W., Mokdad, A. H., Kulp, D. & Hyon, A. (2006). Has the national do not call registry helped or hurt state-level response rates? A time series analysis. *Public Opinion Quarterly, 70*, 794-809.

Linsky, A. S. (1975). Stimulating responses to mailed questionnaires: A review. *Public Opinion Quarterly, 39*, 82-101.

Liu, A., Sharkness, J., & Pryor J.H. (2008). Findings from the 2007 Administration of Your First College Year (YFCY): National Aggregates. Higher Education Research Institute. http://www.heri.ucla.edu/PDFS/YFCY_2007_Report05-07-08.pdf

Loosveldt, G., & Storms, V. (2008). Measuring public opinions about surveys. *International Journal of Public Opinion Research, 20*, 74-89.

Lynn, P. (2003). PEDAKSI: Methodology for collecting data about survey non-respondents. *Quality & Quantity, 37*, 239-261.

Lynn, P., Clarke, P., Martin, J., & Sturgis, P. (2002). The effects of extended interviewer efforts on nonresponse bias. In R. M. Groves, D. A. Dillman, J. L. Eltinge, & R. J. A. Little (Eds.), *Survey nonresponse* (pp. 135-147). New York: John Wiley & Sons, Inc.

Macek, A. J., & Miles, G.H. (1975). IQ score and mailed questionnaire response. *Journal of Applied Psychology, 60*, 258-259.

Malaney, G.D. (2002a). You still need high response rates with web-based surveys. *Student Affairs On-Line, 3*.
http://studentaffairs.com/ejournal/Winter_2002/rates.htm

Malaney, G. D. (2002b). Scholarship in student affairs through teaching and research. *NASPA Journal, 39*, 132-146.

Manfreda, K. L., Bosnjak, M., Berzelak, J., Haas, I., & Vehovar, V. (2008). Web surveys versus other survey modes: A meta-analysis comparing response rates. *International Journal of Market Research, 50*, 79-104.

Martin, E. (2009). Can a deadline and compressed mailing schedule improve mail response in the decennial census? *Public Opinion Quarterly, 73*, 361-367.

Matteson, M. T. (1974). Type of transmittal letter and questionnaire color as two variables influencing response rates in a mail survey. *Journal of Applied Psychology, 59*, 535-536.

Mayer, C. S., & Pratt, Jr. R. W. (1966-1967). A note on nonresponse in a mail survey. *The Public Opinion Quarterly, 30*, 637-646.

McCoy, M., & Hargie, O. (2007). Effects of personalization and envelope color on response rate, speed and quality among a business population. *Industrial Marketing Management, 36*, 799-809.

McGinnis, E. D. (2006). Nonresponse bias in student assessment surveys: A comparison of respondents and non-respondents of the National Survey of Student Engagement at an independent comprehensive catholic university. Unpublished doctoral dissertation, Marywood University, Scranton, Pennsylvania. Retrieved December 1, 2009 from http://nsse.iub.edu/pdf/research_papers/Nonresponse%20Bias%20in%20Student%20Assessment%20Surveys%20-%20Elizabeth%20McInnis.pdf

Merkle, D. M., & Edelman, M. (2002). Nonresponse in exit polls: A comprehensive analysis. In R. M. Groves, D. A. Dillman, J. L. Eltinge, & R. J. A. Little (Eds.), *Survey nonresponse* (pp. 243-257). New York: John Wiley & Sons, Inc.

Merriam, S. B. (1998). *Qualitative research and case study applications in education.* San Francisco: Jossey-Bass Publications.

National Survey of Student Engagement. (n.d.) About NSSE. http://nsse.iub.edu/html/about.cfm

National Survey of Student Engagement. (2005). National Survey of Student Engagement 2005 Annual Report. Retrieved from http://nsse.iub.edu/NSSE_2005_Annual_Report/ response_rate_summary.cfm

National Survey of Student Engagement. (2006). National Survey of Student Engagement 2006 Annual Report. Retrieved from http://nsse.iub.edu/NSSE_2006_Annual_Report/ response_rate_summary.cfm

National Survey of Student Engagement. (2007a). National Survey of Student Engagement 2007 Annual Report. Retrieved from http://nsse.iub.edu/NSSE_2007_Annual_Report/ response_rate_summary.cfm

National Survey of Student Engagement (2007b). Experiences that matter: Enhancing student learning and success. Annual report 2007. Retrieved February 20, 2010 from http://nsse.iub.edu/ NSSE%5F2007%5FAnnual%5FReport/docs/withhold/ NSSE_2007_ Annual_Report.pdf

National Survey of Student Engagement. (2008). NSSE 2008 Overview. Retrieved from http://services.georgiasouthern.edu/osra/download/ NSSE%202008%20Overview.pdf

National Survey of Student Engagement. (2009). NSSE 2009 Overview. Retrieved from http://nsse.iub.edu/2009_Institutional_Report/pdf/NSSE_2009_ Overview.pdf

National Survey of Student Engagement. (2010). NSSE 2010 Overview. Retrieved from http://nsse.iub.edu/2010_Institutional_Report/pdf/ NSSE%20Overview_ 2010.pdf

Nederhof, A.J. (1983). The effects of material incentives in mail surveys: Two studies. *Public Opinion Quarterly, 47*, 103-111.

Nevin, J. R., & Ford, N. M. (1976). Effects of a deadline and a veiled threat on mail survey responses. *Journal of Applied Psychology, 61*, 116-118.

Newson, J. A. (2004). Disrupting the 'student as consumer' model: The new emancipatory project. *International Relations, 18*, 227-239.

Newton, R. R., & Rudestam, K. E. (1999). Your statistical consultant: Answers to your data analysis questions. Thousand Oaks, CA: Sage Publications.

Nielsen, H. D., Moss, R. H., & Lee, E. A. (1978). Response bias in follow-up studies of college students. *Research in Higher Education, 9*, 97-113.

O'Neil, M. J. (1979). Estimating the nonresponse bias due to refusals in telephone surveys. *Public Opinion Quarterly, 43*, 218-232.

Organ, D.W. (1988). Organizational Citizenship Behavior: The good soldier syndrome. Lexington, MA: Lexington Books.

Palomba, C. A., & Banta, T. W. (1999). Assessment essentials: Planning, implementing, and improving assessment in higher education. San Francisco: Jossey-Bass.

Pampel, F. C. (2000). Logistic regression: A primer. Sage University Paper Series on Quantitative Applications in the Social Sciences, 07-132. Thousand Oaks, CA: Sage.

Parsons, R. J., & Medford, T. S. (1972). The effect of advance notice in mail surveys of homogeneous groups. *Public Opinion Quarterly, 36*, 258-259.

Pascarella, E. T. (2001). Identifying excellence in undergraduate education: Are we even close? *Change, 33*(3), 19-23.

Patten, M. L. (2001). *Questionnaire research: A practical guide (2nd ed.*). Los Angeles: Pyrczak Publishing.

Petty, R. E., Cacioppo, J. T., Strathman, A. J., & Priester, J. R. (1994). To think or not to think: Exploring two routes to persuasion. In S. Shavitt & T. C. Brock (Eds.), *Persuasion: Psychological insights and perspectives* (pp. 113-147). Boston: Allyn & Bacon.

Peytcheva, E. & Groves, R. M. (2009). Using variation in response rates of demographic subgroups as evidence of nonresponse bias in survey estimates. *Journal of Official Statistics, 25*, 193-201.

Pickery, J., & Loosveldt, G. (2002). A multilevel multinomial analysis of interviewer effects on various components of unit nonresponse. *Quality & Quantity, 36*, 427-437.

Pickery, J., Loosveldt, G., & Carton, A. (2001). The effects of interviewer and respondent characteristics on response behavior in panel surveys: A multilevel approach. *Sociological Methods Research, 29*, 509-523.

Pike, G. R., (2007). Adjusting for nonresponse in surveys. In J.C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. XXII), (pp. 411-449). Dordrecht, The Netherlands: Springer.

Pike, G. R. (2008). Using weighting adjustments to compensate for survey nonresponse. *Research in Higher Education, 49*, 153-171.

Porter, S.R. (2004). Raising response rates: What works? In S.R. Porter (ed.), Overcoming survey research problems (pp. 5-21). *New Directions for Institutional Research*, n. 121, San Francisco, Jossey-Bass.

Porter, S. R. (2005). Survey research policies: An emerging issue for higher education. In P. D. Umbach (ed.), Survey research: Emerging issues. *New Directions for Institutional Research*, n. 124, San Francisco: Jossey-Bass.

Porter, S. R. (2011). Do college student surveys have any validity? *The Review of Higher Education, 35*, 45-76.

Porter, S. R., & Umbach, P.D. (2006). Student survey response rates across institutions: Why do they vary? *Research in Higher Education, 47*, 229-247.

Porter, S. R., & Whitcomb, M. E. (2003a). The impact of lottery incentives on student survey response rates. *Research in Higher Education, 44*, 389-407.

Porter, S. R., & Whitcomb, M. E. (2003b). The impact of contact type on Web survey response rates. *Public Opinion Quarterly, 67*, 579-588.

Porter, S.R. & Whitcomb, M.E. (2004a). Understanding the effect of prizes on response rates. In S.R. Porter (ed.), Overcoming survey research problems (pp. 51-62). *New Directions for Institutional Research*, n. 121, San Francisco, Jossey-Bass.

Porter, S. R., & Whitcomb, M. E. (2004b). E-mail contacts: A test of graphical designs in survey research. *Social Science Computer Review, 22*, 370-376.

Porter, S. R., & Whitcomb, M. E. (2005a). Non-response in student surveys: The role of demographics, engagement and personality. *Research in Higher Education, 46*, 127-152.

Porter, S. R., & Whitcomb, M. E. (2005b). E-mail subject lines and their effect on web survey viewing and response. *Social Science Computer Review, 23*, 380-387.

Porter, S. R., & Whitcomb, M. E. (2007). Mixed-mode contacts in web surveys: Paper is not necessarily better. *Public Opinion Quarterly, 71*, 635-648.

Porter, S. R., Whitcomb, M.E., & Weitzer. (2004). Multiple surveys of students and survey fatigue. In S.R. Porter (ed.), Overcoming survey research problems (pp. 63-73*). New Directions for Institutional Research*, n. 121, San Francisco, Jossey-Bass.

Powers, D. E., & Alderman, D. L. (1982). Feedback as an incentive for responding to a mail questionnaire. *Research in Higher Education, 17*, 207-211.

Presser, S. & McCulloch, S. (2011). The growth of survey research in the United States: Government-sponsored surveys 1984-2004. *Social Science Research, 40*, 1019-1024.

Pryor, J.H. (2010). CIRP Freshman Survey Institutional Cover Letter: Paper/Web Invitation. Retrieved February 21, 2011 from https://www.drcsurveys.com/HERIRegistration/ AdministrationGuidelines.aspx

Rea, L. M., & Parker, R. A. (1997). *Designing and conducting survey research: A comprehensive guide* (2nd ed). Jossey-Bass: San Francisco.

Reio, Jr. T. G. (2007) Survey nonresponse bias in social science research. *New Horizons in Adult Education and Human Resource Development, 21*(1, 2), 48-51.

Reuss, C. F. (1943). Differences between persons responding and not responding to a mailed questionnaire. *American Sociological Review, 8,* 433-438.

Rogelberg, S. G. (2006). Understanding nonresponse and facilitating response to organizational surveys. In A. I. Kraut (Ed). *Getting Action from Organizational Surveys: New Concepts, Technologies, and Applications* (pp. 312-325). San Francisco: Jossey-Bass.

Rogelberg, S. G., Conway, J. M., Sederburg, M. E., Sptizmuller, C., Aziz, S., & Knight, W. E. (2003). Profiling active and passive nonrespondents to an organizational survey. *Journal of Applied Psychology, 88,* 1104-1114.

Rogelberg, S. G., Fisher, G. G., Maynard, D. C., Hakel, M. D., & Horvath, M. (2001). Attitudes toward surveys: Development of a measure and its relationship to respondent behavior. *Organizational Research Methods, 4,* 3-25.

Rogelberg, S. G., and Luong, A. (1998). Nonresponse to mailed surveys: A review and guide. *Current Directions in Psychological Science, 7,* 60-65.

Rogelberg, S. G., Luong, A., Sederburg, M. E., & Cristol, D. S. (2000). Employee attitude surveys: Examining the attitudes of noncompliant employees. *Journal of Applied Psychology, 85,* 284-293.

Rogelberg, S. C., Spitzmueller, C., Little, I, & Reeve, C. L. (2006). Understanding response behavior to an online special topics organizational satisfaction survey. *Personnel Psychology, 59,* 903-923.

Rogelberg, S. G., & Stanton, J. M. (2007). Introduction: Understanding and dealing with organizational survey nonresponse. *Organizational Research Methods, 10,* 195-209.

Roose, H., Lievens, J., & Waege, H. (2007). The joint effect of topic interest and follow-up procedures on the response in a mail questionnaire: An empirical test of the leverage-saliency theory in audience research. *Sociological Methods Research, 35,* 410-428.

Roper, B. W. (1986). Evaluating polls with poll data. *Public Opinion Quarterly, 50,* 10-16. Ross, H. L. (1963). The inaccessible respondent: A note on privacy in city and country. *Public Opinion Quarterly, 27,* 269-275.

Rossi, P. H., Wright, J. D., & Anderson, A. B. (1983). Sample surveys: History, current practice, and future projects. In P.H. Rossi, J.D. Wright, & A.B. Anderson (Eds.), *Handbook of survey research,* (pp. 1-20). San Diego: Academic Press Inc.

Rossman, G., & Rallis, S. F. (2003). *Learning in the field*: *An introduction to qualitative research* (2nd ed.). Thousand Oaks, CA: Sage Publications.

Rudig, W. (2008). Assessing nonresponse bias in activist surveys. *Quality & Quantity [electronic version]*. Retrieved from http://www.springerlink.com.silk.library.umass.edu:2048/content/r03251802204517x/fulltext.pdf

Ruiz, S., Sharkness, J., Kelly, K., DeAngelo, L., Pryor, J.H. (2010). Findings from the 2009 Administration of the Your First College Year (YFCY): National Aggregates. Higher Education Research Institute. http://www.heri.ucla.edu/PDFs/pubs/Reports/YFCY2009Final_January.pdf

Santucci, D., & Hardy, D. (2009). NSSE materials overview (Webinar). Retrieved February 22, 2011 from http://nsse.iub.edu/webinars/2009_09_08_Materials/Materials_2010_09082009.pdf

Saunders, D. B. (2011). Students as customers: The influence of neoliberal ideology and free-market logic on entering first-year college students. Unpublished doctoral dissertation, University of Massachusetts Amherst.

Sax, L. J., Gilmartin, S. K., & Bryant, A. N. (2003). Assessing response rates and nonresponse bias in Web and paper surveys. *Research in Higher Education, 44*, 409-432.

Schaeffer, D. R., & Dillman, D. A. (1998). Development of a standard e-mail methodology: Results of an experiment. *Public Opinion Quarterly, 62*, 378-397.

Schleifer, S. (1986). Trends in attitudes toward and participation in survey research. *Public Opinion Quarterly, 50*, 17-26.

Schneider, K. C., & Johnson, J. C. (1995). Stimulating response to market surveys of business professionals. *Industrial Marketing Management, 24*, 265-276.

Singer, E. (2002). The use of incentives to reduce nonresponse in household surveys. In R. M. Groves, D. A. Dillman, J. L. Eltinge, & R. J. A. Little (Eds.), *Survey nonresponse* (pp. 41-54). New York: John Wiley & Sons, Inc.

Singer, E. (2006). Nonresponse bias in household surveys. *Public Opinion Quarterly, 70*, 637-645.

Singer, E. Van Hoewyk, J., & Neugebauer, R. J., (2003). Attitudes and Behavior: The impact of privacy and confidentiality concerns on participation in the 2000 Census. *Public Opinion Quarterly, 67*, 368-384.

Singer, E., Mathiowetz, N. A., & Couper, M. P. (1993). The impact of privacy and confidentiality concerns on survey participation: The case of the 1990 U. S. census. *Public Opinion Quarterly, 57*, 465-482.

Sjoberg, G. (1954-1955). A questionnaire on questionnaires. *The Public Opinion Quarterly, 18*, 423-427.

Slaughter, S., & Rhoades, G. (2004). *Academic capitalism and the new economy: Markets, state and higher education.* Baltimore, MD: Johns Hopkins University Press.

Smart, J. C. (2005). Attributes of exemplary research manuscripts employing quantitative analyses. *Research in Higher Education, 46*, 461-477.

Smart, J. C., Feldman, K. A., & Ethington, C.A. (2006). Holland's theory and patterns of college student success. Commissioned report for the national symposium on postsecondary student success: Spearheading a dialog on student success. National Postsecondary Educational Cooperative: http://nces.ed.gov/npec/pdf/smart_team_report.pdf

Smith, T. W. (2002). Reporting survey nonresponse in academic journals. *International Journal of Public Opinion, 14*, 469-474.

Sosdian, C. P., & Sharp, L. M. (1980). Nonresponse in mail surveys: Access failure or respondent resistance. *Public Opinion Quarterly, 44*, 396-402.

Spitzmuller, C., Glenn, D. M., Barr, C. D., Rogelberg, S. G., & Daniel, P. (2006). "If you treat me right, I reciprocate": Examining the role of exchange in organizational survey response. *Journal of Organizational Behavior, 27*, 19-35.

Spitzmuller, C., Glenn, D. M., Sutton, M. M., Barr, C.D., & Rogelberg, S. G. (2007). Survey nonrespondents as bad soldiers: Examining the relationship between organizational citizenship and survey response behavior. *International Journal of Selection and Assessment, 15*, 449-458.

Steeh, C. G. (1981). Trends in nonresponse rates, 1952-1979. *Public Opinion Quarterly, 45*, 40-57.

Stocke, V. (2006). Attitudes toward surveys, attitude accessibility and the effect on respondents' susceptibility to nonresponse. *Quality and Quantity, 40*, 259-288.

Stocke, V., & Langfeldt, B. (2004). Effects of survey experience on respondents' attitudes toward surveys. *Bulletin de Methodologie Sociologique, 81*, 5-32.

Stoop, I. A. L. (2004). Surveying nonrespondents. *Field Methods, 16*, 23-54.

Stoop, I. A. L. (2005). *The hunt for the last respondent*. The Hague: Social and Cultural Planning Office of the Netherlands.

Sudman, S. (1976). *Applied sampling*. New York: Academic Press.

Sudman, S., & Bradburn, N. M. (1982). *Asking questions: A practical guide to questionnaire design*. San Francisco: Jossey-Bass.

Tanur, J. M. (1994). *Questions on questions: Inquiries into the cognitive bases of surveys.* Thousand Oaks, CA: Sage Publications.

Tatum, B. D. (2000). The complexity of identity: Who am I? In, M. Adams, W. J. Blumenfeld, R. Castaneda, H.W. Hackman, M. L. Peters, and X. Zuniga (eds.), Readings for diversity and social justice: An anthology on racism, anti-Semitism, sexism, heterosexism, ableism, and classism (pp. 9-14). New York: Routledge.

Thompson, L. F., Zhang, Z, & Arvey, R. D. (2010). Genetic underpinnings of survey response. *Journal of Organizational Behavior*, [Electronic Version]. Retrieved September 16, 2010 from http://onlinelibrary.wiley.com/doi/10.1002/job.692/pdf

Tomsic, M. L., Hendel, D. D., & Matross, R. P. (2000). A World Wide Web response to student satisfaction surveys: Comparisons using paper and Internet formats. Paper presented at the Annual Meeting of the Association for Institutional Research, Cincinnati, OH.

Toops, H. A. (1926). The returns from follow-up letters to questionnaires. *Journal of Applied Psychology, 10*, 92-101.

Tourangeau, R. (2004). Survey research and societal change. *Annual Review of Psychology, 55*, 775-801.

Tourangeau, R. Rips, L. J., & Rasinski, K. (2000). *The psychology of survey response.* New York: Cambridge University Press.

Trussell, N., & Lavrakas, P. J. (2004). The influence of incremental increases in token cash incentives on mail survey response: Is there an optimal amount? *Public Opinion Quarterly, 68*, 349-367.

Twombly, S.B. (1993). What we know about women in community colleges: An examination of the literature using feminist phase theory. *The Journal of Higher Education, 64*, 186-210.

Umbach, P.D. (2004). Web surveys: Best practices. In S.R. Porter (ed.), Overcoming survey research problems (pp. 23-38). *New Directions for Institutional Research*, n. 121, San Francisco, Jossey-Bass.

United States Census Bureau. (nd). United States Census American Community Survey: Response rates data. http://www.census.gov/acs/www/methodology/response_rates_data/

Upcraft, M.L., & Wortman, T. I. (2000). Web-based data collection and assessment in student affairs. *Student Affairs On-Line, 1*, Retrieved from http://studentaffairs.com/ejournal/Fall_2000/art1.html

Van Goor, H., & Rispens. S. (2004). A middle class image of society. *Quality & Quantity, 38*, 35-49.

Vehovar, V., Batageli, Z., Manfreda, K. L., & Zaletel, M. (2002). Nonresponse in Web surveys. In R. M. Groves, D. A. Dillman, J. L. Eltinge, & R. J. A. Little (Eds.), *Survey nonresponse* (pp. 229-242). New York: John Wiley & Sons, Inc.

Voogt, R. J. J., & Van Kempen, H. (2002). Nonresponse bias and stimulus effects in the Dutch national election study. *Quality & Quantity, 36*, 325-345.

Walston, J. T., Lissitz, R. W., & Rudner, L. M. (2006). The influence of web-based questionnaire presentation variations on survey cooperation and perceptions of survey quality. *Journal of Official Statistics, 22*, 271-291.

Warriner, K., Goyder, J., Gjertsen, H., Hohner, P., McSpurren, K. (1996). Charities, no: lotteries, no; cash, yes: Main effects and interactions in a Canadian incentives experiment. *Public Opinion Quarterly, 60*, 542-562.

Williams, E. A., Laguilles, J. S., Kolek, E. A., & Fleenor, T. J. (2008). Student survey savvy: SAREO shares strategies. Workshare presented at the annual meeting of the North East Association for Institutional Research, Providence, RI.

Willimack, D. K., Schuman, H., Pennell, B., & Lepkowski, J.M. (1996). Effects of a prepaid nonmonetary incentive on response rates and response quality in a face-to-face survey. *Public Opinion Quarterly, 59*, 78-92.

Willis, G.B. (2005). *Cognitive Interviewing: A tool for improving questionnaire design*. Thousand Oaks, CA: Sage Publications.

Woosley, S. A. (2005). Survey response and its relationship to educational outcomes among first-year college students. *Journal of College Student Retention, 6*, 413-423.

Yammarino, F. J., Skinner, S. J., & Childers, T. L. (1991). Understanding mail survey response behavior: A meta-analysis. *Public Opinion Quarterly, 55*, 613-639.