Exploring Self-Reported Survey Data in Higher Education as an Artifact of Socio-Environmentally Influenced Behavior

Author: Derek Hottell

Persistent link: http://hdl.handle.net/2345/bc-ir:107175

This work is posted on eScholarship@BC, Boston College University Libraries.

Boston College Electronic Thesis or Dissertation, 2016

Copyright is held by the author. This work is licensed under a Creative Commons Attribution 4.0 International License (http://creativecommons.org/licenses/by/4.0).

Boston College Lynch School of Education

Department of Higher Education and Educational Leadership

Higher Education Administration

EXPLORING SELF-REPORTED SURVEY DATA IN HIGHER EDUCATION AS AN ARTIFACT OF SOCIO-ENVIRONMENTALLY INFLUENCED BEHAVIOR

Dissertation by

DEREK HOTTELL

submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy

August 2016

© Copyright by Derek Hottell 2016

Much of the research about college student engagement is based upon self-reported surveys, but little is known about how students formulate responses to these instruments. The purpose of this study was to specifically address this dearth of knowledge by deepening our understanding of how students' perceptions of their environments and demographic characteristics influenced their response patterns on self-reported surveys. Bronfenbrenner's (2005) human ecology model of development, Bourdieu and Passeron's (1990) theory of social reproduction, and Tourangeau, Rips, and Rasinski's (2000) four phase survey response process were used, as the theoretical framework to better understand this phenomenon. This was an explanatory sequential mixed methods study, and the participants were first-year undergraduate students at a four-year, private institution in New England. Students completed the College Student Report (CSR) as well as a series of time-use diaries, and the results of the instruments were compared using descriptive and multivariate analyses. Finally, semi-structured individual interviews were conducted, which included aspects of retrospective cognitive interviewing, with twenty-seven (27) students to understand how their experiences and response processes were shaped by their individual campus experiences and identities. Findings from this study suggest the construct validity of selfreported survey data measuring behavioral frequency patterns is questionable, as students statistically significantly under reported time spent preparing for class, engaging in co-curricular activities, commuting to campus, and relaxing and socializing. Furthermore, student characteristics such as racial/ethnic identity and satisfaction with college choice statistically significantly explained some of the variance in the reporting behaviors of students after controlling for other factors. This information coupled with the data gleaned from the semistructured individual interviews indicate factors related to how students differentially experience

the campus environment based upon their unique ecological niches affects how they respond on self-reported surveys, which means the data provided by such instrumentation is likely providing substantively different information than how it is most commonly interpreted and applied.

ACKNOWLEDGEMENTS

This dissertation is the culmination of the dedication and hard work of many, many people. First, I want to thank Dr. Heather Rowan-Kenyon who has supported and challenged me throughout my entire doctoral journey, especially as the chair of my dissertation committee. She pushed me to think deeper and invest more of myself into this project when I was being complacent; she pulled me back from the brink of impending madness when I spent a month pursuing the wrong path in data analyses; and she always provided me with pathways and opportunities to explore my scholarship. I also want to thank Dr. Ana Martinez-Aleman and Dr. Lauren Saenz for their guidance, feedback, and insight throughout my dissertation process, which helped to shape, define, and improve not only the outcome of this document, but also my own thinking.

I want to thank my cohort, Dr. Scott Radimer and Dr. Danny Zepp. Your friendship, conversation, and laughter throughout graduate school shaped my experiences and challenged me to be a better scholar. Thank you also to my other fellow graduate students who shared many a drink and a laugh with me throughout my time in school as well as the many friends I made during my time in Boston. Thank you all for helping me maintain a semblance of balance between the personal and the professional.

Thank you to all of the people in my professional and personal life who have shaped my beliefs, thoughts, and actions. From my colleagues at Western Kentucky University to Seattle University to the Office of the Dean of Students at Boston College to Virginia Commonwealth University, thank you all for your encouragement, friendship, and mentorship. I want to especially thank all of the students, faculty, and staff of Spectrum Weekend. Your courage, generosity of spirit, and faith in the inherent goodness of humanity fed my spirit for three years.

Thank you to my family who has always supported me and provided me with examples of courage, diligence, and humility. I am extremely privileged to have a family who loved me, cheered me, and supported me my entire life, even when I made choices they would not necessarily have made for themselves. I am the person I am today because of you.

Finally, I want to thank and acknowledge my wife and partner, Megan. You have made my life more than I ever would have dared dreamed it could be. You have given me the courage to move to new places, the ambition to strive to be the best version of myself, the humility to honestly reflect upon my own failings and weaknesses, and the love and encouragement to boldly take risks. You are the partner of my life. Without you, this dissertation would not be possible, but in truth, without you, my life, as I have lived it, would not be possible. So, thank you, and I love you!

TABLE OF CONTENTS

ABSTRACT	iii
ACKNOWLEDGEMENTS	v
LIST OF TABLES	X
FIGURES	xii
CHAPTER 1: INTRODUCTION	1
Introduction	1
Purpose	5
Research Questions	7
Theoretical Framework	7
Methodology	10
Significance	
Limitations and Delimitations	14
CHAPTER 2: LITERATURE REVIEW	16
Introduction	16
The Rise of Surveys in Social Science Research	17
Towards the Modern Survey	
Measuring the College Student Experience	
Engagement as an Organizing Concept to Understand Student Outcomes	
Historical Foundations of Student Engagement	
Student Engagement	
Conditional Benefits of Student Engagement	
Programs Associated with Higher Levels of Student Engagement	
The Role of the Environment in Encouraging Student Engagement	
Criticisms of the NSSE, Student Engagement, and Survey Methodology	
Questions Regarding Construct Validity	
Issues with Self-Reported Surveys	39
Rebuttal and Acknowledgement of Criticisms of NSSE	
Contextualizing and Problematizing the Survey Response Process	
Theoretical Framework	46
Overview of Four-Phase Response Theory	
Ecology of Human Development	
Social Reproduction in Education	60
Survey Response Through the Lens of Ecology	
CHAPTER 3: RESEARCH DESIGN AND METHEDOLOGY	65
Introduction	65
A Brief Review of Mixed Methods	66

Selecting a Research Design	
Rationale for This Study	69
Data Collection	
Target Population and Site Selection	
Quantitative Data Collection	75
Qualitative Data Collection	87
Incentives for Participation	88
Research Permission and Ethical Considerations	89
Role of the Researcher	
Analyzing the Data to Answer the Research Questions	
Quantitative Analyses	
Qualitative Analysis and Mixing the Data	
Limitations and Delimitations	109
CHAPTER 4. RESULTS	112
Introduction	
Research Question One: Comparing Answers from the Diary to the CSR	
Research Question Two: Systematic Reporting Behavior	
Response Behavior for Time Spent Preparing for Class	
Response Behavior for Time Spent Frequency for Courricular Activities	
Response Behavior for Time Spent Engaged in Community Service	134
Response Behavior for Time Spent Commuting to Campus	
Aggregate Response Behavior	
Research Ouestion Three: Comparison to NSSE Engagement Indicators	
Research Question Four: Qualitative Findings and Mixing the Data	
Formulating a Response on the CSR	
The Qualitative Experiences of the Students	153
Mixing the Data	
Conclusion	
CHAPTER 5. DISCUSSION IMPLICATIONS AND CONCLUSION	169
Introduction	100 168
Salf-Raflevivity as the Principle Investigator	100 160
Research Question One: Comparing Answers from the Diary to the CSR	
Research Question Two: Systematic Reporting Relayior	174 174
Research Question Three: Comparison to NSSE Engagement Indicators	1/ 7 177
Austion Four: Why Do These Patterns Fyist?	
Takeaways	
Implications for Practitioners	187 1 20
Implications for Researchers	
Implications for Future Research	
Implications for Future Acts area and an anti-	

Conclusion	
Appendix A	
Email Correspondence for College Student Report	
Initial Invitation Email for Study	
First Reminder Email	
Final Reminder Email	
Appendix B	
College Student Report	
End of Survey Thank You Notification	
Appendix C	
Time-Use Diary Administered Via Email Correspondence	
Initial Invitation Email	
First Diary Submission Email	
Reminder Emails for Late Submissions	
Subsequent Reminder of Pending Diary Entry Emails	
Subsequent Emails to Submit Diary Entries	
Appendix D	
Time Use Diary Instrument Administered Via Email	
End of Diary Thank You Notification	
Final End of Diary Thank You Notification	
Appendix E	
SMS Reminders for Time Use Diary Entries	
SMS Reminder of Pending Diary Entry Emails	
SMS Reminder to Submit Diary	
SMS Reminders to Submit Diary for Late Entries	
Appendix F	
Email Invitation to Individual Interviews	
Appendix G	
Semi-Structured Individual Interview Informed Consent	
Appendix H	
Semi-Structured Individual Interview Protocol	
References	

LIST OF TABLES

Table 1. Relationship of New NSSE Engagement Indicators to Former NSSE Benchmarks2'	7
Table 2. Demographic Characteristics of Sample	5
Table 3. Comparing Means of Behavioral Frequencies for Monday and Wednesday	7
Table 4. Comparing Means of Behavioral Frequencies for Tuesday and Thursday	7
Table 5. Percentage of Cases that did not Submit Any Diary Entries for Selected Characteristics	
within Dataset	9
Table 6. Predictor Variables. 102	2
Table 7. Average Time Spent Engaged in Various Activities According to Different Data	
Collection Methods	5
Table 8. Descriptive Statistics and Results of Wilcoxon Sign Rank Test for Hours Spent in a	
Typical 7-Day Week Engaged in a Variety of Activities	8
Table 9. Distribution of Reporting Behavior on CSR with Accurate and Over Report	
Collapsed12	3
Table 10. Predictor Variables for Binary Logistic Regression Model with Categories	
Collapsed12	5
Table 11. Summary of Model Fit and Explained Variance Statistics for Binary Logistic	
Regression Models12	7
Table 12a. Predictors of Reporting Behavior by Variables of Interest. 12a	8
Table 12b. Predictors of Reporting Behavior by Variables of Interest, Continued	9
Table 12c. Predictors of Reporting Behavior by Variables of Interest, Continued	0
Table 12d. Predictors of Reporting Behavior by Variables of Interest, Continued	1

Table 13. Model Fit Summary Statistics Comparing Model Using Only Diary Entry Time-U	se
Metrics with a Model Using Time-Use Diary Metrics and CSR Time-Use Metrics	139
Table 14a. Comparison of Models Predicting NSSE Engagement Indicators Using	
Information from Diaries and CSR Self-Reports	140
Table 14b. Comparison of Models Predicting NSSE Engagement Indicators Using	
Information from Diaries and CSR Self-Reports, Continued	141
Table 15a. Overview of Demographic Information and Reporting Behavior for Qualitative	
Data Sample	143
Table 15b. Overview of Demographic Information and Reporting Behavior for Qualitative	
Data Sample, Continued	144
Table 16a. Definitions and Types of Response Information Included in the NSSE	
Engagement Indicators	179
Table 16b. Definitions and Types of Response Information Included in the NSSE	
Engagement Indicators, Continued	180
Table 16c. Definitions and Types of Response Information Included in the NSSE	
Engagement Indicators, Continued	181

LIST OF FIGURES

Figure 1. Theoretical Model of Survey Response Process within the Context of a	
Student's Ecology and Influenced by Social Reproduction	. 63
Figure 2. Overview of Research Design for Study	. 71
Figure 3. Decision Tree for Coding Students' Time-Use Diaries	. 95

CHAPTER 1: INTRODUCTION

Introduction

In the past twenty years, the net cost of higher education has increased dramatically, as state governments have continued to divest from public education, and the structure of federal support has shifted from grant aid to student loans. Since the 1993-1994 academic year, the net cost of tuition has increased by 22% in private, four-year institutions and 52.9% in their public counterparts (Chronicle of Higher Education, 2014). Such rising costs have had little impact upon affordability for families in the highest income brackets, as net college cost as a percent of median family income only increased 3% from 2000 to 2008 for those individuals in the highest income quintile (The National Center for Public Policy and Higher Education [NCCPPHE], 2008). However, the financial landscape of college affordability is far more alarming for those in the lowest-income quintile, as the average cost of attendance has increased from 39% of family income in 1999-2000 to 55% in 2007-2008 (NCCPPHE, 2008). These inequalities in college affordability have not gone unnoticed by the general public.

In the 2014 State of the Union Address, President Barack Obama (2014) cited a need to make "concrete commitments to reduce inequality in access to higher education" by helping "every hardworking kid go to college and succeed when they get to campus." But, how do colleges reduce such inequalities in college student outcomes? Paradoxically, the programs, which have most often been linked through research to positive student outcomes, are often the most expensive (Kuh, 2009a). As a result, practitioners are challenged to implement initiatives to encourage positive student outcomes without concurrently creating financial barriers preventing enrollment and engagement. Moving forward, colleges and universities will need to utilize their finite resources selectively to best meet institutional and national priorities, but how do researchers and practitioners utilize research to identify those programs most likely to help students succeed without increasing cost?

Self-reported surveys are the most commonly utilized method to gather evidence to identify and support effective policies, programs, and practices (Pascarella & Terenzini, 2005). In fact, much of the research on higher education outcomes is predicated upon the "quantification of the subjective realm of human experience" through such instruments (Converse, 1987, p. 85). Through questionnaires and surveys, data is gleaned from individuals who self-report frequency of behaviors, assess their personal states (e.g., motivation, work ethic, health), and/or relay their attitudes on a variety of topics (Fowler, 1995). So, how did selfreported surveys become widely accepted as valid indicators of individuals' behaviors and attitudes?

Using self-reported data to make population estimates before the early part of the 20th century would have been tantamount to "scientific heresy" (Willis, 2005, p. 13). Wide-spread acceptance of surveys, as mechanisms to accurately predict social phenomena can be traced to Gallup correctly predicting Franklin D. Roosevelt to win the 1936 presidential election while a straw poll with many more respondents conducted by a national publication incorrectly predicted a win for Alf Landon (Wright & Marsden, 2010). Survey research was further legitimized by its incorporation within academia and the university setting. After WWII, those individuals who had previously been conducting applied research for the government utilizing survey methodologies joined or re-joined the university setting and carried with them a desire to have such survey methodologies taken seriously as academically relevant research (Converse, 1987). These individuals came in sufficient numbers to begin to create internal knowledge communities devoted to survey methodologies, establish research centers, and partner with large-scale

2

governmental projects and grants, which all served to further legitimate surveys as empirical social science within the academy (Converse, 1987).

Psychologists and social science researchers continue to give credence to "the essential validity of the subjective realm and to the value of their own instruments for studying this realm" (Converse, 1987, p. 59). Converse (1987) suggests the growth of surveys is attributable to them being useful tools for "powerful groups to gather, assess, represent (or misrepresent), try to influence, and invoke mass opinion" (1987, p. 2). The theory holds individuals are not surveyed, so their lives can be improved, but instead those conducting the surveys want information about public sentiment for "the potential exploitation of those attitudes" (Beniger, 1983, p. 482). However, less skeptical and critical explanations for the prevalence of survey methodologies suggest surveys are simply tools for gathering data that "can serve some purposes of all the major constituencies" (Converse, 1987, p. 2).

Many examples exist of surveys being used by varied constituencies for a variety of purposes. In a large-scale democratic society, surveys are essential for political and societal elites to effectively understand and adapt to the prevailing sentiment of the governed. Without surveys, politicians would have relatively few mechanisms to understand the will of the people. Community organizers use surveys within historically marginalized communities to represent and communicate prevailing opinions to effect societal change, and researchers employ surveys to efficiently understand wide-spread phenomena (Converse, 1987). The use of such selfreported surveys and questionnaires has proliferated in all social science fields, and they are heavily utilized to measure student outcomes and better understand important student processes in higher education (Gonyea, 2005). Many factors have contributed to the increased use of selfreported surveys, not the least of which is the relative cost, as such instruments are far cheaper to

3

implement than other data collection methods (Converse, 1987). But, how do students formulate their responses, and is the information attained through such methodologies valid?

The College Student Report (CSR) is the primary instrument used to collect data on student engagement for the National Survey of Student Engagement (NSSE, 2014a). It is implemented and managed by the Indiana University Center for Postsecondary Research (CPR) and is widely utilized with over 1,500 colleges and universities participating in data collection since its inception in 2000 (NSSE, 2014a). Student engagement "represents the time and effort students devote to activities that are empirically linked to desired outcomes of college and what institutions do to induce students to participate in these activities" (Kuh, 2009a, p. 683). The NSSE is based upon self-reported survey data, which are traditionally discussed, critiqued, and applied through a post-positivist lens where the parts "can be broken down into simpler elements" to be able to control and predict phenomena (Davis & Sumara, 2005, p. 307; Porter, 2011).

However, as Davis and Sumara (2005) contend, there are "no observeless observations or measureless measurements" (p. 314). In the case of the NSSE, students are asked to measure and observe themselves, but how do they inform and construct these responses? McCormick and McClenney (2012), researchers working with engagement-related studies, acknowledge "research into how respondents use vague quantifiers has convincingly shown that respondents use various processes of comparison, rather than recall and tally to situate their response" (p. 315). If responses are being made through comparison, they are fundamentally relational, which means they are necessarily culturally and conditionally situated. Accordingly, Bowman (2010) found many students tend to overestimate or underestimate their gains when self-reporting depending upon student characteristics (e.g., first-generation status, gender, race, etc.) and the

type of construct being measured (e.g., critical thinking, contact with individuals from diverse backgrounds, etc.). Such disparities in reporting behavior are termed response errors, which "represent the discrepancy between a theoretical 'true score' and that which is reported by the respondent" (Willis, 2005, p. 13). Brenner (2012) suggests such response errors occur because people are not responding to "who we are, but rather to who we think we are" (p. 378).

Furthermore, Brenner (2012) contends such over-reporting or under-reporting is "more than an annovance..., [but] is a survey artifact...to better understand culturally situated behavior" (p. 378). Consequently, the manner in which students respond on the CSR may have more to do with how students perceive their environment and *construct* their identity in response to what is systematically privileged or marginalized by their institutional cultures (Museus, 2014; Olivas, 2011; Tinto, 1993). When individuals respond on the CSR, they may not be responding with an 'objective' measurement of their 'actual' engagement, but rather they may be responding to how they understand themselves in and through the contexts and conditions of their environment. If self-reported survey data is to be used for evidence-based practice and decisionmaking related to institutional finance, program evaluation, or accreditation, it has real, tangible consequences for students (Davis & Sumara, 2005). Consequently, a richer understanding of how students are constructing their responses on self-reported surveys would provide practitioners with relationally, conditionally, and contextually situated "actionable" data to inform practice without the potentially damaging pretense of being "concrete" (McCormick & McClenney, 2012, p. 310).

Purpose

The purpose of this study is to contextualize and deepen our understanding of how students construct their responses on self-reported surveys. Within higher education, such

nuanced knowledge is especially important since much of the research literature about how and why students persist to graduation, develop cognitively, and engage academically and socially is based upon student self-reports. The CPR and its collaborators strongly encourage institutions to utilize such information in budgeting, strategic planning, program assessment, accountability reporting, and institutional accreditation, so how researchers and practitioners interpret and apply self-reported survey information has real, tangible impacts upon student outcomes (Banta, Pike, & Hansen, 2009; Kinzie & Pennipede, 2009; McCormick, Gonyea, & Kinzie, 2013a).

Problematically, concerns have been raised about the validity of the CSR in accurately gauging student behaviors (Campbell & Cabrera, 2011; Olivas, 2011; Porter, 2011). Pascarella, Seifert, and Blaich (2010), amongst others, partially address these concerns, as their study found the NSSE to be significantly, positively related to objective measures included in the Wabash National Study of Liberal Arts Education (Wabash), but conflicting findings have been made by Bowman (2010) and others indicating systematic over-reporting and under-reporting by students on the CSR based upon identity characteristics (Pascarella & Terenzini, 2005). Consequently, Porter (2011) suggested time-use diaries as potential tools to better understand student behavioral patterns. McCormick and associates (2013a) also indicate a study comparing engagement reported through time-use diaries and the CSR may "be valuable to investigate what differences might exist between survey and time diary or time-sampling methods in characterizing the behavior of college students" (p. 63). Ultimately, "surveys of student engagement are blunt instruments that yield imperfect information" (McCormick et al., 2013a, p. 64), and this study is designed to deepen our understanding of the processes individuals utilize to respond to surveys in order to "determine the particular uses to which our data can be put" (Willis, 2005, p. 256). Specifically, this study addressed the following research questions:

Research Questions

- How do students' responses regarding average weekly hours spent preparing for class, engaging in co-curricular activities, working for pay, volunteering for community service, relaxing/socializing, caring for dependents, and commuting to campus compare between time-use diaries and the CSR?
- 2. What are the differences in response patterns between the two instruments based upon student demographic characteristics?
- 3. How do students' responses on the CSR and time-use diaries relate to the NSSE Engagement Indicators?
- 4. Why, if at all, do these differential response patterns exist in this particular college environment?

Theoretical Framework

Bronfenbrenner's (2005) human ecology model provides a useful framework for considering the complex interplay of person, process, and context in the survey response process. Within this framework, the theory of social reproduction offers a possible explanation to consider how social norms manifest in students' ecologies (context), which may influence students' understandings of themselves (Bourdieu & Passeron, 1990). But, Bronfenbrenner (2005) poses the question, "What is the process that person and context are to generate?" (p. 163). While the human ecology model provides a framework for understanding the interplay of the person and the context in affecting developmental outcomes, a process must still be applied within the model to more fully understand a particular phenomenon. For the purposes of this study, Tourangeau, Rips, and Rasinski's (2000) four-phase survey response process was utilized within this framework to elucidate the cognition process of individuals responding to surveys. The four-phase survey response process frames the myriad of cognitive processes individuals utilize when answering a given question into the following four broad phases: comprehension, retrieval, judgment, and response (Tourangeau et al., 2000). Completion of these phases, though, is "not necessarily direct, but rather is reconstructive in nature" (Willis, 2005, p. 38), and as such, the culturally informed lens of the people responding to the instrument inherently shapes and influences their response patterns (Tourangeau et al., 2000). Consequently, Schuman (1982) recommends utilizing social psychological theories to understand the survey response process, as an artifact of this culturally situated behavior, since differential response patterns may not be illustrative of biases within an instrument, but of an instrument providing substantively different information. Bronfenbrenner's (1993) human ecology model of development and Bourdieu and Passeron's (1990) theory of social reproduction in education were utilized in this way to consider the historically and culturally situated reciprocal meaning-making process students utilized when responding to the survey.

Tourangeau and associates' (2000) four-phase response process theory is "an idealized list" (p. 16) of the cognitive processes a respondent undertakes in responding to a given question, and it is based upon the "vital importance of cognition in the survey response process" (Willis, 2005, p. 35). During the comprehension phase, individuals must make meaning of the question being asked of them, which requires them to "attend to questions and instructions, represent [the] logical form of [the] question, identify [the] question focus (information sought), [and] link key terms to relevant concepts" (Tourangeau et al., 2000, p. 8). In the retrieval phase, respondents must not only "retrieve specific [and] generic memories," but also "fill in missing details," as they are unlikely to be able to accurately recall every experience germane to the question being asked (Tourangeau et al., 2000, p. 8). The judgment phase requires individuals to make

decisions regarding the quality of information they have accessed, and consequently, they must make inferences based upon the obtained information to determine what is likely to have occurred (Tourangeau et al., 2000). Finally, individuals proffer a response in which they must place their inference regarding their memory into a response category and make decisions regarding what information they want to provide based upon the social cues and context (Tourangeau et al., 2000). If each phase is not completed successfully (or if it is skipped completely), response errors are likely to occur (Willis, 2005).

Bronfenbrenner's (1993) model theorizes "human beings are not only partial products, but also partial producers of their environments..., and the created environments are symbolic in nature..., [and] these symbols are...emotionally, socially, and motivationally loaded" (p. 6). The model is theorized as "a system of nested, interdependent, dynamic structures ranging from the proximal, consisting of face-to-face settings, to the most distal, comprising broader social contexts such as classes and cultures" (Bronfenbrenner, 1993, p. 4). Within these environments, individuals develop ecological niches, which are "particular regions in the environment that are especially favorable or unfavorable to the development of individuals with particular personal characteristics" (Bronfenbrenner, 2005, p. 111).

Bourdieu and Passeron's (1990) theory on social reproduction was utilized to analyze and consider the differential experiences of students based upon their relative cultural capital. Cultural capital is "the distance between the cultural arbitrary imposed by the dominant pedagogic action and the cultural arbitrary inculcated by the family pedagogic action" (Bourdieu & Passeron, 1990, p. 30). The more individuals are able to align themselves with the preferences of those individuals, which dominate the cultural discourse, the more likely they will be to successfully navigate an environment. According to Bourdieu and Passeron (1990), the ultimate distillation of social reproduction in education results in self-censorship where individuals remove and limit themselves because they have inculcated the values of the dominant cultural arbitrary and judge themselves according to their cultural capital within this setting. Specifically with the CSR, how does it value certain ways of being within a college setting and reaffirm the "power of arbitrary imposition (the social reproduction function of cultural reproduction)" (Bourdieu & Passeron, 1990, p. 10)? Students' responses on the CSR may be illustrative of how they have interpreted their ecological niche, as a function of their cultural capital within their particular collegiate setting. This interpretation may then be manifest in the survey response process. These theories were utilized in concert to understand the CSR, as a cultural artifact of students in a particular higher educational setting.

Methodology

An explanatory sequential mixed methods design was utilized to better understand the underlying phenomena through a combination of quantitative and qualitative inquiry (Creswell, 2014). First, the students were asked to complete the CSR, which was implemented first to avoid potential issues associated with testing effects, as the process of completing the time-use diaries would require the students to regularly reflect upon their behaviors. This reflective process could provide benchmark data for the students, which could increase their ability to accurately recall their behavioral patterns (Tourangeau et al., 2000). Such concerns necessitated the CSR being administered first, and it was administered via email through Qualtrics.

In the next phase of data collection, the students were asked to complete time-use diaries to establish "good baseline data" (Gonyea, 2005, p. 81). Since time-use diaries rely upon short-term memory for the retrieval process, as opposed to long-term memory, as in survey response, the information garnered from the time-use diaries should be more reliable and more likely to

reflect actual behavioral frequency patterns (Fowler, 1995; Tourangeau et al., 2000). The timeuse diary information was collected through the completion of electronic calendars with 30 minute fixed-intervals for five, 24-hour snapshots (Bolger, Davis, & Rafaeli, 2003). To account for the natural fluctuations occurring in students' activity patterns throughout the course of a semester, diary entries were spread over a three-week period to best attain an approximation reflective of what students do in an average week during the academic year (Bolger et al., 2003). The results of the behavioral frequency questions on the CSR were compared to the coded results of the time-use diaries using both descriptive, non-parametric, and parametric statistical analyses.

For the final phase of the analyses, students who completed at least two diary entries were invited to participate in a semi-structured individual interview. These interviews incorporated elements of retrospective cognitive interviewing to ascertain how the students informed their responses on the CSR (Willis, 2005). While retrospective interviewing had substantial limitations due to the time interval between when the students completed the instrument and when the interviews were conducted, such methods had the benefit of not altering the format in which the instrument was taken (Willis, 2005). These interviews also asked the students about their campus experiences, and they were comparatively coded to understand how students' differential campus experiences informed how they responded on self-reported surveys.

The method of site selection and sampling were both purposive. A private, predominately white institution (PWI) was selected because these types of institutions are generally marked with the highest level of prestige, which is a function of the dominant cultural arbitrary, as outlined by Bourdieu and Passeron (1990). In such an environment, students require the greatest amount of cultural capital in order to successfully navigate the institution (Tinto, 1993). Those students who have a different primary habitus (i.e., the initial culture, value, and norms with which a person was inculcated) than the one valued by the dominant cultural arbitrary of the institution are likely to feel especially marginalized (Bourdieu & Passeron, 1990; Tinto, 1993). Consequently, this sense of marginalization may have influenced their responses on the CSR and resulted in an increased effect size in the rate of differential response patterns between the two instruments (Bourdieu & Passeron, 1990; Museus, 2014; Tinto, 1993). Conversely, those students who have the most alignment between their primary habitus and the dominant cultural arbitrary of the institution, may also demonstrate increased rates of differential response patterns, as they feel valorized by the institution and respond accordingly. Bowman's (2010) findings regarding differential response patterns, as a function of student characteristics, lends credence to these hypotheses and supports situating the study in this particular setting to potentially observe the greatest effect size in the population. Within this institution, first-year students were targeted because engagement related studies often focus specifically upon this population (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008).

Due to possible issues with attrition within the sample, 1,000 students began the process with an expectation of having at least 150 students participate in the initial quantitative phase (i.e., time-use diaries and completion of CSR). For the qualitative, semi-structured individual interviews, all students who completed at least two diary entries were invited to participate with a goal of at least six students representative of a subsample of students who systematically under reported on the instrument and at least six students who systematically accurately or over reported on the instrument participating. With these students, retrospective cognitive interviewing probes about the survey response process as well as questions regarding their meaning-making processes and perceptions of their environments were utilized in one-on-one semi-structured interviews. Due to the complexity of the study, mixed methods was an apt choice to study the phenomenon because it allowed me to ask both questions of a quantitative nature (e.g., how do the response patterns compare, and what are the patterns?) as well as qualitative questions (e.g., why might any patterns exhibited be occurring?).

Significance

While the CPR indicates a desire for the CSR results to be used to "increase understanding of college quality and...support institutional improvement efforts" (NSSE, 2014b, NSSE's position, para. 1), these efforts often take the form of increasing programming, justifying the allocation of financial resources, assessing program effectiveness, completing institutional accreditation, and providing accountability reporting (Banta, Pike & Hansen, 2009; Kinzie & Pennipede, 2009; McCormick, Gonyea, & Kinzie, 2013a). Specifically, Banta and associates (2009) identify several institutions who have used NSSE data to inform practice.

IUPUI created undergraduate learning metrics using NSSE data; Illinois State University and Mississippi State University used NSSE data as part of their accreditation processes; and, the higher education systems in Wisconsin and South Dakota used self-reported survey data, as part of their accountability processes for the institutions within their systems (Banta et al., 2009). These are only a few examples of how self-reported survey information has been utilized, but they provide clear examples of the high-stakes implications associated with how practitioners and researchers choose to interpret and apply such data. Simply put, when data is used for these purposes, it can never be objective or value-neutral (Davis & Sumara, 2005).

How data is utilized has an impact upon what narratives may or may not be perpetuated in the campus environment. If self-reported survey data continues to be accepted without being problematized, higher educational institutions may simply continue to enforce the dominant cultural arbitrary, which has both tangible, financial costs in the forms of budget allocation and accreditation as well as intangible costs in the form of perpetuating systems of inequity (Karabel, 2005). What if our understandings of how students engage on a college campus have less to do with what they actually do than with how they are systematically privileged or marginalized? Such a finding may support alternate theoretical frameworks of student success and persistence, which highlight the important role of intercultural effort in fostering supportive and engaging atmospheres for students (Museus, 2014). What implications would this have upon the collegiate environment and the design of intervention strategies to prevent student drop-outs, stop-outs, and transfers (Tinto, 1993)? This study assists practitioners and researchers in understanding how students filter and respond to the CSR through their socially constructed meaning-making processes, which has major implications upon how such data is used to inform practice.

Limitations and Delimitations

This study is not generalizable to a larger population and would require replication to verify any findings. The study is limited to deepening our understanding of how these particular students informed their responses through their particular socially constructed ecology. Additionally, I am necessarily of and in this study, and I mutually constituted meaning with the students through my own socially constructed ecology, which inevitably influenced the findings. To argue otherwise would be disingenuous, and consequently, through "reflexivity..., demanding that we examine the complex interplay of our own personal biography, power and status, interactions with participants, and written word," the researcher's value positions, as he understands them, will be acknowledged as a function of the study (Rossman & Rallis, 2012, p. 91).

Additionally, some level of selection bias was likely, as those students who chose to participate and continued to participate may have been fundamentally different than those

students who chose to not participate or discontinued participation. However, the study was focused on how students construct their responses, which all individuals to some degree must necessarily do regardless of issues with unit non-response. Finally, this study faced some likely limitations with a testing effect occurring with the students. Certainly, the process of the students completing the CSR and carefully recording their daily activities in their diaries may have influenced their particular behavioral patterns. These limitations, though, did not likely grievously impair the study's aim to explore how students express themselves through the CSR and offer one "source of possible models rather than a source of actual explanation" (Davis & Sumara, 2005, p. 314).

CHAPTER 2: LITERATURE REVIEW

Introduction

How do students form and inform their responses on self-reported surveys? The great majority of studies about college student outcomes and processes, including student engagement, are based upon information yielded from such instruments, but relatively little is known about the complex cognitive processes students utilize to formulate these responses (Porter, 2011). Additionally, systematic issues with over- and under-reporting have been found with self-reported instruments based upon demographic characteristics and institutional environments (Bowman, 2010). Why would students be more or less likely to over- or under-report based upon their racial or gender identities? Brenner (2012) suggests such reporting behavior may be reflective not of response bias, but of culturally situated, contextual behavioral patterns in which individuals do not respond with what they literally do, but rather respond based upon how they perceive themselves. These same response patterns may be enacted by students when completing the CSR, the instrument used to measure college student engagement.

The CSR was selected as the instrument to consider this phenomenon because it forms the "underpinnings of an extraordinary volume of research" (Pascarella & Terenzini, 2005, p. 54), and specific concerns have been raised about its construct validity (Olivas, 2011). Consequently, three primary bodies of literature were reviewed in order to appropriately frame this study. First, a brief history of how surveys and questionnaires became so heavily utilized in social science research will be explored, including how self-reported surveys became the primary instrument to understand the student change process in higher education. Second, a more detailed review of the literature related to student engagement and the NSSE will be discussed. Within this context, studies using NSSE data will be reviewed, specifically studies related to the role of the institutional environment in encouraging differential student outcomes. Finally, studies questioning the validity of the NSSE and problematizing self-reported surveys will be detailed.

This chapter will conclude with a detailed explanation of the theoretical framework being employed to understand this phenomenon. Tourangeau and associates' (2000) four-phase survey response process was utilized as the process in Bronfenbrenner's (2005) person-process-contexttime model for human development. Additionally, the role of cultural capital in social reproduction in education will be detailed, as a means to understand how prevailing cultural attitudes and norms filter through students' environments to shape their experiences (Bourdieu & Passeron, 1993). Within the context of Bronfenbrenner's (2005) model, these messages would originate in students' macrosystems and filter through their nested environments to influence their understandings of themselves. By combining these three theoretical frameworks, I will be better positioned to understand how cultural messaging influences students' understandings of themselves in and through their environments, which may affect how they respond on selfreported surveys.

The Rise of Surveys in Social Science Research

The most distal and rudimentary forms of surveys can trace their lineage to the beginnings of recorded history in the forms of censuses, but the initial formulations of such surveys are difficult to trace (Weisberg, Krosnick, & Bowen, 1996) and bear little resemblance to what most individuals in modern, Western society would consider a scientific survey (Wright & Marsden, 2010). Instead, these most primitive forms of collecting information about the populace were more akin to straw polls with little possibility to make systematic estimates about the larger population because they did not employ advanced sampling techniques, nor did they

conduct a detailed systematic study of a population (Converse, 1987). The earliest social surveys using quantitative analytical and representational techniques were conducted in the late 19th century by Charles Booth (Converse, 1987; Groves et al., 2009; Weisberg et al., 1996; Wright, 2009; Wright & Marsden, 2010).

The use of surveys continued to spread throughout the early 1900s, including to the United States where they were utilized as tools in the reform movement to highlight issues of social inequality and justify needed societal reforms (Converse, 1987). These early survey designs, though, only bear a passing resemblance to modern survey methodologies, as they primarily relied upon observation and researcher inferences to draw conclusions (Groves et al., 2009). These early forms of surveys, though, established the use of "quantitative summaries from systematic measurements to understand a fundamental societal problem" (Groves et al., 2009, p. 4).

Towards the Modern Survey

Public opinion polling and market-based research became widely utilized in the early 20th century, as politicians and companies desired to understand prevailing public sentiment, so they could tailor their products and/or messages accordingly (Groves et al., 2009). One such purpose for surveys was employed by the government throughout the Great Depression to attain information about employment rates, which introduced the role of probability sampling in surveys (Groves et al., 2009). However, probably no event crystallized the value of probability-based surveys for predicting social phenomena more than a Gallup poll conducted on the presidential election in 1936 (Wright & Marsden, 2010). Gallup utilized a relatively small, but representative sample to predict Franklin D. Roosevelt winning the 1936 presidential election (Wright & Marsden, 2010). Famously, the *Literary Digest* predicted a landslide victory for Alf

Landon after conducting a straw poll of their readership, which included mailing response ballots to over 10 million households and receiving 2.4 million responses on these ballots (Lusinchi, 2012). While the exact reason for this outcome is debated, Gallup correctly picking Roosevelt to win the presidential election in 1936 is widely regarded as a turning point in the legitimatization of probability sampling and survey methodologies for social science inquiry (Lusinchi, 2012).

Surveys, though, were not fully accepted as a scientifically rigorous method for understanding human phenomena until they were incorporated within the university setting. The federal agencies of the Bureau of Labor Statistics and Census Bureau had been well established prior to the Great Depression, but Roosevelt established the Committee on Government Statistics and Information Services, which was charged with evaluating the efficacy and organization of the statistical agencies (Desrosières, 1998). These committees directly led to the infusion of increasing numbers of young, brilliant academics in key roles of government research – an important source of funding during troubling financial times (Desrosières, 1998). This symbiotic relationship between government and higher education would continue throughout the Great Depression and WWII, as government officials increasingly relied upon advanced statistical analyses to inform social service programs, war efforts, and numerous other endeavors (Desrosières, 1998)

After WWII, those individuals who had previously been conducting applied research for the government utilizing survey methodologies joined or re-joined the university setting and carried with them a desire to have such survey methodologies taken seriously as academically relevant research (Converse, 1987). These individuals came in sufficient numbers to begin to create internal knowledge communities devoted to survey methodologies, establish research centers, and partner with large-scale governmental projects and grants, which all served to further legitimate surveys as empirical social science within the academy (Converse, 1987). From these early roots, the use of such self-reported surveys and questionnaires has proliferated in all social science fields (Converse, 1987), but they were not quickly adopted to understand student outcomes or the student change process in higher education (Pascarella & Terenzini, 2005).

Measuring the College Student Experience

Beginning as early as the 1930s, many scholars attempted to objectively discover how colleges affect students by comparing the college going population to the non-college going population (Pascarella & Terenzini, 2005). This line of inquiry continued until the late 1970s, and primarily compared institutional quality through the comparison of resources (e.g., financial endowment, number of faculty with culminating degrees, etc.), student entry characteristics (e.g., student test scores), or student outcomes (e.g., financial earnings of graduates) (Terenzini, 1989). These comparisons, though, provided little information about how colleges affect students since any observed differences in graduates may simply have been a result of the credentialing function of the university or pre-existing differences among individuals, which the college did not affect (Pascarella & Terenzini, 2005; Terenzini, 1989).

However, beginning in the late 1970s and continuing until today, "public officials...[have been] asking whether the soaring costs of higher education are draining off resources that could be better used for other public purposes" (Astin, 2001, p. 2). Consequently, colleges and universities felt the need to justify the cost of higher education by demonstrating the college student experience was an integral component of the student change process. Higher education could not just be associated with positive outcomes; the predicted outcome for individuals had to be positively changed through the process of college attendance (Astin, 2001). In response to

these evolving expectations of policymakers, the "ground rules of American postsecondary education" research necessarily changed to meet these expectations (Pascarella & Terenzini, 2005, p. 1). Specifically, researchers, such as Pace and Astin (2001), began suggesting models only comparing the college-going population to the non-college-going population were inaccurate because of the "variety of experiences possible within the collegiate sphere is so great" (p. 7). While comparing these two populations may be illustrative of the measurable outcomes associated with college attendance, the comparison did little to help explain *why* and *how* these outcomes occurred. Such a comparison only afforded a researcher the ability to explore differences, not explain them.

The establishment of the College Student Experience Questionnaire (CSEQ) in 1979 by Pace (1984) was instrumental in shifting the assessment pattern of college student outcomes from being purely input and resource dependent. The CSEQ was one of the first instruments to utilize self-reported data to consider the processes occurring within a college environment, which might encourage positive student outcomes (Pace, 1984). Much of the research of students from the period preceding 1980 viewed the learner as a passive recipient of knowledge, the proverbial vessel to be filled, but research began to show students learn best when they "work actively and collaboratively with faculty members and student peers" (Pascarella & Terenzini, 2005, p. 3). Pace's (1984) CSEQ was foundational in applying self-reported surveys to understanding the college processes affecting positive student outcomes (McCormick, Kinzie, & Gonyea, 2013a). This shift in assessing the impact of college by evaluating the effectiveness of the processes they utilize to facilitate positive student outcomes was a direct antecedent to the concept of student engagement.

Engagement as an Organizing Concept to Understand Student Outcomes

Student engagement "represents the time and effort students devote to activities that are empirically linked to desired outcomes of college and what institutions do to induce students to participate in these activities" (Kuh, 2009a, p. 683). In 1998, the Pew Charitable Trust in association with the National Center for Higher Education Management Systems commissioned a group of leading scholars, including Kuh, to assist in the conception and design of an instrument to more effectively assess undergraduate student learning (NSSE, 2009). The NSSE was conceived and piloted in 1999 as the means to address this issue, and over the past fourteen years, it has spawned several other associated instruments (NSSE, 2009). Since its inception, the NSSE (2012a) has become widely utilized with over 1,500 colleges and universities participating in the intervening fourteen years. Kuh's student engagement concept, though, was not established in a vacuum, but instead, it incorporates elements of integration, involvement, quality of student effort, Astin's Input-Environment-Output (IEO) model, and the general causal model of student change (Wolf-Wendel, Ward, & Kinzie, 2009). Consequently, to more fully understand student engagement, an exploration of its historical antecedents is required.

Historical Foundations of Student Engagement

Student engagement "is not a unitary construct," but instead it traces its lineage to a "family of ideas rooted in research on college students and how their college experiences affect their learning and development" (McCormick et al., 2013a, p. 51). Kuh's student engagement phenomenon incorporates elements of Astin's theory of involvement, Tinto's theory of integration, and Pace's emphasize upon quality of student effort (McCormick et al., 2013a). Additionally, Pascarella's general causal model of change and Astin's IEO model provide

important theoretical underpinnings for considering how student engagement affects student outcomes (McCormick et al., 2013a).

Student engagement incorporates many elements from higher education research relating to "quality of effort and involvement in productive learning activities" (Kuh, 2009b, p. 6). Astin's (2001) IEO model provides a framework for better understanding the student change process and more accurately interpreting how different environments affect students. Tinto's (1993) theory of student departure is similar to Astin's IEO model, but specifically explains the student attrition process and the role integration plays in student persistence patterns. Pascarella's general causal model of the student change process "expanded on Tinto's work by incorporating institutional characteristics and quality of student effort and by linking to more outcomes than retention" (McCormick et al., 2013a, p. 53). Student engagement builds upon this framework and incorporates all of these elements to provide guidance for how higher educational institutions perform their talent development function and foster student success (Kuh, Kinzie, Shuh, Whitt, & Associates, 2005).

Astin's theory of involvement. Student involvement is an extension of the work of Pace (1998) on quality of student effort examining the relationships "between environments and attainment, effort and outcomes, and patterns of college students' activities and institutional influences" (McCormick et al., 2013a, p. 52). Much of Astin's (2001) work is based upon the Cooperative Institutional Research Program (CIRP), which he helped to originate and is the "largest ongoing study of the American higher education system, with longitudinal data covering some 500,000 students and a national sample of more than 1,300 institutions of all types" (p. 4). The goal of the CIRP is to "isolate changes brought about by the college experience from changes attributable to other sources" (Astin, 2001, p. 6).
Based upon his work with the CIRP, Astin developed a theory of student involvement "to explain the dynamics of how students change or develop" (Pascarella & Terenzini, 2005, p. 53). His theory is couched in "the Freudian notion of cathexis (the investment of psychological energy) as well as the learning theory of time on task" (Pascarella & Terenzini, 2005, p. 53). Astin's theory postulates that "the amount of learning or development is directly proportional to the quality and quantity of involvement," and effective educational practice is associated with its ability to induce such behavior (Pascarella & Terenzini, 2005, p. 53). Consequently, learners are not passive vessels, but are active participants in creating their own knowledge, and the role of the university is to create conditions, which encourage such behavior (Astin, 2001).

Astin's IEO model. From his work with the CIRP, Astin also created the Input-Environment-Output (IEO) model to consider how students change throughout their time in college. Astin (2001) asserts people are not static; they will continue to grow and change over the course of time regardless of whether they attend college or not, so the college environment can only properly be thought to influence and/or alter outcomes, not produce them. The college environment is not comparable to an "industrial model" where the college is a factory accepting uniformed input materials and producing uniformed outputs (Astin, 2001, p. 16). Because colleges do not have uniformed inputs, and "education is both process and product" (McCormick et al., 2013a, p. 51), a more appropriate model for assessing institutional quality and effectiveness is the one utilized in healthcare where environmental or treatment factors "change the prediction" of an outcome (Astin, 2001, p. 20). Astin's (2001) IEO model provides a theoretical framework for "measuring the quality of the processes" (Pace, 1998, p. 28) affecting students during college. By identifying what the input characteristics were for an individual and comparing these to the outputs, one could discern what role the environment may have played in affecting the student (Astin, 2001).

Tinto's theory of student departure. Student engagement also incorporates elements of Tinto's theory of student departure, specifically the important role of individuals' perceptions of their environment and social and academic interactions in shaping and informing involvement patterns and attitudes (Kuh, 2009b). Tinto's theory represented a major transition in considering how and why students do not persist (Pascarella & Terenzini, 2005). Previous research treated the decision to depart from an institute of higher learning as a purely rational, economic decision, one in which the individual weighs future benefit in comparison to current risk or expenditure (Tinto, 1993). Tinto (1993), though, began to shift this conversation, as he developed a theory of student departure rooted in Durkheim's theory of suicide, as he postulated the same reasons, which make individuals remove themselves from society in the form of suicide, are similar to the reasons students remove themselves from a college culture or environment.

Imbedded within the theory of student departure is the concept of integration, which is essentially one's alignment and enmeshment with a culture (Tinto, 1993). Integration is heavily influenced by students' pre-entry intentions and commitments as well as their perceptions of their environment (Tinto, 1993). Intention and commitment refer to "important personal dispositions with which a student enters college," but the environment also powerfully influences, adjusts, and shapes these dispositions (Tinto, 1993, p. 37). Students whose values do not align with the institution may find themselves in a state of "incongruence" where a "substantial mismatch between the intellectual orientation of the student and that of the institution" exists (Tinto, 1993, p. 117). Tinto's (1993) model of integration and his theory of student departure illustrate the need for this alignment, as "having the requisite skills for

persistence is one thing. Being able to apply them in perhaps strange, unfriendly settings is another" (p. 73).

Student Engagement

From these foundations, Kuh and associates (2005) identified the concept of student engagement as an important measure of institutional quality. Kuh and associates (2005) define student engagement as "the amount of time and effort students put into their studies and other activities" and how institutions create environments to foster and encourage such participation (p. 9). Educationally purposeful activities are those, which have been empirically linked to positive student outcomes through previous research (NSSE, 2012a). Since participation in such programs has been shown previously to be an indicator of positive student outcomes, student engagement in these activities is thought to be a good proxy of actually measuring such outcomes (NSSE, 2012b). These instruments and the resulting scholarship have consistently shown higher scores on engagement benchmarks to be strong predictors of student persistence, academic performance, and other positive student outcomes (Kuh, Kinzie, Cruce, Shoup, & Gonyea, 2006).

The NSSE was recently updated, but from 1999 to 2013, these educationally purposeful activities were grouped into five benchmarked areas: level of academic challenge, active and collaborative learning, enriching educational experiences, student-faculty interaction, and supportive campus environment (NSSE, 2012a). These benchmark areas, though, have transitioned to a "set of ten 'Engagement Indicators,' nested within broad themes that echo the Benchmarks" as well as six separately reported high-impact practices (McCormick, Gonyea, & Kinzie, 2013b, p. 10). These changes were made to address concerns about the benchmarks inability to provide "specificity about where to concentrate improvement efforts," and since the

benchmarks were based on only half of the engagement related questions, they encouraged "institutional users...to neglect other valuable information" (McCormick et al., 2013b, p. 10). According to McCormick and associates (2013b), the new indicators have "strong psychometric properties..., useful in supplemental analyses," especially for considering "variability in student engagement that occurs within institutions rather than between them" (p. 10). These new indicators are shown in *Table 1*.

Table 1a. Relationship of New NSSE Engagement Indicators to Former NSSE Benchmarks	
Former NSSE Benchmarks	New Engagement Indicators
Level of Academic Challenge	Theme: Academic Challenge
	Higher-Order Learning
	• Reflective and Integrative Learning
	Learning Strategies
	Quantitative Reasoning
Active & Collaborative Learning	Theme: Learning with Peers
	• Discussions with Diverse Others
Student-Faculty Interaction	Theme: Experiences with Faculty
	• Student-Faculty Interaction
	Effective Teaching Practices
Supportive Campus Environment	Theme: Campus Environment
	• Quality of Interactions
	Supportive Environment
Enriching Educational Experiences	Participation in High-Impact Practices
	Learning Communities
	Service-Learning
	• Research with Faculty
	Study Abroad
	 Internships and Field Experiences
	Culminating Senior Experiences

Source. McCormick et al., 2013b

Conditional Benefits of Student Engagement

Many studies cite the conditional benefits of student engagement relating to how students experience differential benefits from their involvement in educationally purposeful activities based upon their demographic characteristics (Kuh et al., 2008). Simply put, not all students experience the campus and benefit from engagement in the same way (Kuh et al., 2008). Consequently, there is no magic panacea or engagement program, which will benefit all students (Kuh, 2008). Kuh and associates (2008) regressed GPA and retention over engagement scores to determine if they were related and whether or not engagement was a statistically significant predictor. Utilizing regression modeling to discern what the effect size and covariance was of different independent and dependent variables (e.g., demographics, engagement score, financial status, and academic preparedness), they found measures of engagement to be stronger predictors of student persistence than demographic variables (Kuh et al., 2008). However, when levels of engagement and student demographics were both included in the analysis, they became a significantly stronger predictor of student persistence than either set of independent variables in isolation (Kuh et al., 2008). Kuh and associates (2008) also found students who identified as African-American benefited more from engagement than their peers who identified as White.

Moreover, Pike and Kuh (2005) utilized Astin's IEO model as their framework to evaluate the relative role of second and first generation student status on student engagement and intellectual development. The researchers used the CSEQ, developed by Pace (1998), in the study to measure characteristics of students as they entered college. First generation students did not have as high of student engagement scores, nor did they perform as well academically as measured by GPA as compared to second-generation students (Pike & Kuh, 2005). However, first and second generation students benefitted equally from living on campus and other engagement activities, and when controlling for factors such as living on campus, SES, time spent working, and other independent variables, no meaningful differences between first- and second-generation student engagement scores or academic performance were evident (Pike & Kuh, 2005). Based upon these findings, the researchers concluded differences in engagement levels had less to do with educational level of parents directly, but more to do with factors like living on campus and educational aspirations, which are most likely indirectly influenced by an individual's parents' educational level (Pike & Kuh, 2005). Once again, the study highlights how different students experience student engagement in different ways based upon their conditional factors.

However, while engagement does seem to be conditional (i.e., different students experience engagement in different ways), it also seems to be compensatory. Kuh and associates (2008) found students who are less likely to succeed based upon academic readiness actually benefit much more from engagement, than students who are more likely to succeed. Students with higher academic preparedness, as shown by higher ACT scores, seem to receive less GPA benefit from increased engagement scores as compared to their less academically prepared counterparts (Kuh et al., 2008). Consequently, the researchers concluded while conditional factors such as student characteristics matter to student success, the effects diminish significantly when factors such as student engagement are considered (Kuh et al., 2008).

Programs Associated with Higher Levels of Student Engagement

Kuh (2008) in the Association of American Colleges & Universities (AAC&U) Leap Project reviewed high-impact educational programs, including learning communities, service learning, study abroad, student-faculty research, and senior culminating experiences. Highimpact programs are those, which are significantly related to higher student engagement scores (Kuh, 2008). While no one solution will work for every single student due to the conditional effects of student experiences, Kuh (2008) suggests institutions should encourage students to engage in such programming because of the compensatory effects such participation can have for students. Factors such as living on campus, engaging in a living learning community, or participating in a writing intensive workshop were found to be strongly related to student persistence with living in a residence hall having the strongest relationship (Kuh, Cruce, Shoup, Kinzie, and Gonyea, 2008).

Pike and Kuh (2005) found living on campus to be strongly related with higher engagement levels, and it was the strongest predictor of student persistence when student characteristics such as SES, gender, and race were controlled. The work of Schudde (2011) further supports these findings of living on campus being linked with positive student outcomes. Utilizing two national datasets, Schudde (2011) conducted propensity score matching to determine if there was a causal link between living on campus and persistence, and the researcher found students who live on campus are three percent (3%) more likely to persist than those who do not, a statistically significant finding. Additionally, Webber, Krylow, and Zhang (2013) found living on campus to be statistically significantly related to higher cumulative GPAs for seniors in their single institutional study, although they found no such benefit for first-year students.

Learning communities have also been associated with higher levels of student engagement. Zhao and Kuh (2004) found a statistically significant positive relationship between participation in a learning community and self-reported cognitive gains and institutional satisfaction. Kuh and associates (2008) identify similar benefits of participation in learning communities with such participation being associated with higher GPAs and an increased likelihood of students persisting from their first to their second year. Pike, Kuh, and McCormick (2011) studied the relationship between learning community participation and student engagement and identified a statistically significant relationship between such participation and positive student outcomes. In their study, they found participation in a learning community to have a positive relationship with student engagement regardless of conditional factors such as student class year or institutional characteristics (Pike et al., 2011).

Additionally, purposeful first-year experience workshops have been indicated as highly effective practices (Kuh, 2008). Allen and Lester (2012) situated their work in Kuh's theory of student engagement and performed a case study utilizing engagement programs to increase student retention at a technical community college in Georgia. The institution utilized a success coach to monitor academic progress of at-risk students and foster a connection between the institution and students through individual counseling and a college survival skills class (Allen & Lester, 2012). Using remedial math students not enrolled in the program as a control group, the researchers found students enrolled in the program were significantly more likely to know campus resources and to persist to their second-year than their peers who were not enrolled in the course (Allen & Lester, 2012).

All of these programs seem to share some common characteristics, such as the facilitation of meaningful and sustained dialogue and interaction amongst peers and between faculty and students. In a study conducted at Bridgewater State University, Turrentine, Esposito, Young, and Ostroth (2012) found a significant relationship between participation in intensive cocurricular activities (e.g., being a resident assistant, member of an intercollegiate athletic team, etc.) and self-reported gains in engaging with individuals from diverse backgrounds, developing a personal code, effective collaboration, and contributing to the welfare of a community. Webber and associates (2013) found such practices as living on campus, writing intensive workshops, and community service to be statistically significantly related to cumulative GPA, but they also found significant differences between students based upon demographic characteristics. Students who identified as African American reported lower levels of satisfaction with the campus environment (Webber et al., 2013), which begets the questions: what role does the environment play in encouraging student engagement, and how might the environment be experienced differentially based upon demographic characteristics?

The Role of the Environment in Encouraging Student Engagement

While input characteristics affect college outcomes and students benefit differentially from engagement, research consistently highlights the importance of environmental factors in fostering student engagement to affect positive student outcomes and encourage persistence (Pascarella & Terenzini, 2005). Kuh and associates (2005) assert "what students do during college counts more for what they learn and whether they will persist in college than who they are or even where they go to college" (p. 8). Supporting this claim, Titus (2004) found environmentally related factors such as student involvement, academic performance, and institutional commitment are all much stronger predictors of student persistence than demographic factors such as SES, gender, and hours worked. Since "a considerable body of higher education research indicates that these various forms of involvement can have substantial effects on the student's development" (Astin, 2001, p. 71), the success of the institution is largely determined by its ability to encourage such student engagement. Astin (1984) suggests the "effectiveness of any educational practice is directly related to the capacity of that policy or practice to increase involvement" (p. 298). What are some of these policies and practices that encourage student engagement and persistence?

Alignment. In reviewing the literature, what becomes readily apparent is the important role alignment with the stated and operational mission of an institution plays in encouraging student persistence and other measures of student success. Simply put, students generally perform better when their values and expectations are in alignment with their institution of study (Kuh et al., 2005). Kuh and associates (2005) conducted a study of schools that had higher than expected engagement scores (i.e., Documenting Educationally Effective Practice [DEEP] schools), and they discovered while these universities had vastly different missions, purposes, and functions, they all had a lived mission, which matched their espoused mission. The student populations were able to articulate these missions, and the universities were purposeful in acculturating students to the colleges' climates and unique atmospheres (Kuh et al., 2005).

Kuh and associates (2005) found schools, which had higher than expected engagement scores, were often more upfront with their cultural values, and they actively recruited students who would align with those values, which tended to make the students feel more connected to the university and campus life. Likewise, Tinto (1993) suggests "inaccurate information obtained during the process of application may lead some individuals to enter an institution even though they are likely to find themselves at odds with...the existing social and intellectual communities of the college" (p. 155). Kuh and associates (2005) assert "ultimately, it's about the culture...a focused mission, institutional will, money, talent, and more are necessary but yet insufficient to foster student success" (p. 272).

Campus community. Astin (2001) also found the perception of the community by faculty and students to be one of the most important factors in fostering student success, and perhaps not surprisingly, he found small residential colleges tend to rank far higher on this measure than large, public research institutions. However, Kuh and associates (2005) did find

large institutions are able to combat the feeling of being disconnected by creating small communities within the institution to anchor students. These small communities or subcultures may also help to encourage students to persist even if they do not feel connected to the larger community. According to Tinto (1993), affiliation to subculture groups within an institution "may be sufficient to keep the individual within the broader system of the college" (p. 124). Tinto also acknowledges the role cultural capital plays in anchoring individuals within these subgroups to the larger community, as "the more central one's membership is to the mainstream of institutional life the more likely...is one to persist" (Tinto, 1993, p. 124).

Acculturation. Successful schools assist students with the process of becoming "acculturated" to the environment where "they teach students what the institution values, what successful students do in their context, and how to take advantage of institutional resources for their learning" (Kuh et al., 2005, p. 110). When faculty are better aligned with the mission it becomes more lived, and they are often more effective in engaging students (Kuh et al., 2005). Astin (2001) found religiously affiliated schools and Historically Black Colleges and Universities (HBCU) had faculty members who were more committed to students' personal development, and these same schools had a high correlation with social activism and community orientation. Why would this be the case?

Perhaps these institutions have a more intentional focus and expressed value for such student development because it is seen as central to their institutional goals and values. These institutions were founded for the expressed purpose of enlightening and/or assisting a certain community of people, and those individuals employed by the university may be more inclined to believe in that expressed mission and make a concerted effort to actively cultivate relationships with students. These relationships between faculty and students may be an important component of student persistence, as "frequent contact with the faculty appears to be a particularly important element in student persistence" (Tinto, 1993, p. 56).

The role of the peer group. Much of the college environment is influenced and affected by the students, which reside in the institution. Consequently, many researchers, including Kuh, Astin, and Tinto, consider universities as human aggregate models where "individuals create or define environments even as these environments attract other individuals and help socialize them to maintain the interests, attitudes, values, and behaviors of all occupants" (Pascarella & Terenzini, 2005, p. 47). Astin (2001) cites the peer group as the most influential source of change and development of students during their time in college, as individuals tend to adopt the values and dispositions of the dominant cultural group over time. Additionally, the perceived lack of community by students has the strongest negative effect upon overall satisfaction with the collegiate experience (Astin, 2001).

Perhaps, there is no better illustration of the importance of alignment between a student's values and an institution's than the differences shown between African-American students who attend PWIs compared to those students who attend HBCUs. Astin (2001) found students at HBCUs reported the lowest level of racial conflict, and Tinto (1993) cites students of color at large PWIs struggling to be integrated because of "the absence of familiar social groups with which to make contact" where "the college represents a very foreign social landscape" (p. 58). Tinto (1993) continues to cite the difficulties students with historically marginalized racial identities experience at college, as "academic difficulties, incongruence, isolation, and perhaps finances seem to be more severe for them" (p. 75).

African-American students at HBCUs demonstrate distinct advantages in a "scale measuring their level of involvement and effort in such academic activities as writing

experiences, course learning and interaction with faculty, library use, science learning, and interactions with peers based on course content" (Pascarella & Terenzini, 2005, p. 82). Why would the experiences of African-American students at HBCUs be so much different than their counterparts enrolled in PWIs? These differences may be illustrative of the difference in value and mission alignment, and consequently, how integrated into the campus community the students feel. One could postulate African-American students at an HBCU would have more cultural capital than African-American students at PWIs if for nothing else than because of the peer group in which they find themselves.

Similar to the results for African Americans at HBCUs, women who attend women's colleges are more likely to be satisfied with their collegiate experience, complete their degree, and engage in leadership activities than their counterparts who attend coeducational institutions (Astin, 2001). Women enrolled in women's colleges also indicate higher levels of engagement than their peers enrolled in co-educational institutions (NSSE, 2003). They report higher levels of academic challenge, more active and collaborative learning, more interaction with faculty members, more diversity-related experiences, greater gains in understanding themselves and others, greater gains in general education, and greater gains in their ability to analyze quantitative problems (NSSE, 2003).

These studies suggest alignment with the dominant cultural arbitrary of students' peers within the institution to be essential for fostering student engagement and encouraging persistence (Hughes & Pace, 2003; Tinto, 1993). Astin (2001) found the peer group to have a stronger effect upon student outcomes than faculty interaction, curriculum, or institutional type, and Pascarella and Terenzini (2005) cite several studies showing peer interaction to be a strong influence of academic self-concept. The informal curriculum of the institution (e.g., campus

traditions, the social environment, clubs, etc.), which is largely governed by peers, greatly influences how students experience and perceive the campus environment (Tinto, 1993). Consequently, Tinto (1993) cites conditions occurring in the co-curricular institutional environment as one of the most important influences determining whether or not a student will depart from college, as "leaving has little to do with the inability to meet formal academic requirements" (p. 82). But, how are these perceptions and engagement patterns measured? Why might these differences exist for women and students with historically marginalized racial identities?

Criticisms of the NSSE, Student Engagement, and Survey Methodology

With the "emergence of student engagement as an organizing construct for institutional assessment, accountability, and improvement efforts" in American higher education (Kuh, 2009b, p. 5), questions regarding the instrument's construct validity, institutional applicability, and acknowledgement of emerging and marginalized voices have been raised (Olivas, 2011). Much of this criticism has focused upon the ability of students to accurately remember and report their experiences, a common concern with many studies utilizing self-reported data (Porter, 2011). The NSSE (and most studies regarding the college-staying process) collect self-reported data to record both "*psychological* data, relating to the internal states or traits of the individual; and *behavioral* data, relating to directly observable activities" (Astin, 2001, p. 9), but both are measured through the portal of the student, which must necessarily require some filtering process, as there are "no observeless observations or measureless measurements" (Davis & Sumara, 2005, p. 314). How does this filtering process affect student responses on the NSSE, and how does it represent students' understandings of themselves in and through their environments?

Olivas (2011) and other scholars have raised concerns about the validity of the NSSE, including the validity of the NSSE benchmarks as predictors on an institutional level (Campbell & Cabrera, 2011). A Campbell and Cabrera (2011) study showed when NSSE was applied to a specific institution, the previous engagement benchmarks did not act as predictors, they were highly inter-correlated and not distinctive from one another, and the construct validity for these benchmarks was poor. Other scholars have raised concerns regarding the benchmarks as well, as they question how they were initially grouped and selected. Porter (2011) suggested the rationale for the groupings seemed arbitrary as evident by their inter-correlation, and he questioned how grounded they were in theory. Perhaps in response to these criticisms, the benchmarks have since been changed, but criticisms still exist regarding the instrument.

Questions Regarding Construct Validity

Much of the research conducted on how students navigate and benefit from the college environment is done through self-reported surveys. The NSSE and the CIRP ask students to assess their own progress, but such assessments can be problematic, as results from self-reported instruments do not always align with the results from other forms of instrumentation. Pascarella and Terenzini (2005) found when studying the relationship between the social environment and student learning, the "direction of the findings appears to depend on whether one measures learning with student self-reports or objective, standard measures" (p. 85). For example, students at HBCUs report higher self-reported gains on academic measures than their counterparts, even though objective measures do not corroborate these differences (Pascarella & Terenzini, 2005). Additionally, the NSSE has at times found students at liberal arts colleges report higher gains in cognitive complexity than students at other institutions, but further analysis utilizing different instrumentation indicated students at liberal arts colleges actually gained less cognitively than their peers at other institutions (Pascarella & Terenzini, 2005).

Issues with Self-Reported Surveys

Self-reported survey data can be problematic, as individuals do not accurately remember, nor report their own experiences over a long-duration of time (Porter, 2011). Pike and Kuh (2005) acknowledge the same inherent limitation of NSSE, as its reliance upon self-reported gains of participants may limit its applicability because it relies upon the individuals' perceptions of their experiences (Pike & Kuh, 2005). Studies utilizing self-reported gains have certain limitations because they measure how individuals construct their realities, and many factors contribute to how individuals perceive their environment (Pike & Kuh, 2005). Pascarella, Seifert, and Blaich (2010) also raised concerns about the validity of self-reported data regarding educational gains and exposure to effective programs and practices, especially as the selfreported data from the NSSE is traditionally utilized to indicate such engagement exposure does predict positive student outcomes. The researchers cite recent studies, which show little or no overlap between self-reported gains and actual longitudinal gains of students, as additional cause for concern about the validity of the NSSE benchmarks as predictors of positive student outcomes (Pascarella et al., 2010).

What could explain these contradictory results? Perhaps when students are answering questions regarding how they spend their time, how much they have learned, and how involved they are, they are not answering "objectively." They are instead answering relatively. They are comparing their current experience with other students with which they associate, or they are comparing their experience to their goals or intentions. McCormick and McClenney (2012), researchers with the CPR, acknowledge, "research into how respondents use vague quantifiers

has convincingly shown that respondents use various processes of comparison, rather than recall and tally to situate their response" (p. 315). Pace and Friedlander (1982) performed a study of how students respond when asked to estimate how frequently they engage in various activities. The researchers found "wide individual differences in the meaning attributed to each response category" (Pace & Friedlander, 1982, p. 280), and they suggest this finding "presumably reflects an awareness of what is customary, either in one's own behavior or in the behavior of some familiar group" (p. 278). If responses are being made through comparison, they are fundamentally relational, which means they are necessarily culturally and conditionally situated.

Bowman (2010) found many students tend to overestimate or underestimate their gains when self-reporting depending upon student characteristics (e.g., first-generation status, gender, race, etc.) and the type of construct being measured (e.g., critical thinking, contact with individuals from diverse backgrounds, etc.). Consequently, the manner in which students respond on the NSSE may have more to do with how students perceive their environment and *construct* their identity in response to what is systematically privileged or marginalized by their institutional cultures (Olivas, 2011; Tinto, 1993). If we consider this concept through Tinto's model, perhaps their expectations, goals, or intentions are not being met by the institutional environment (or they are), and this frames how the student responds. This could explain the difference in the self-reported gains and actual gains as well as the differential responses regarding engagement for African-American students at HBCUs compared to PWIs or women at single-gender institutions compared to co-educational ones. Porter (2011) suggests a time-use diary may be a more valuable data collection tool, as it would afford researchers the ability to accurately judge how students are spending their time instead of relying upon individuals' abilities to recall (and accurately and honestly perceive and report) how they spend their time.

This study is specifically designed to heed this call and better understand how students are formulating their responses on the NSSE by comparing them to the results of time-use diaries.

Rebuttal and Acknowledgement of Criticisms of NSSE

Other scholars have found the NSSE to be valid, and Olivas (2011) even acknowledged it has been useful in shifting the conversation regarding institutional effectiveness and how to achieve positive undergraduate student outcomes. McCormick and McClenney (2012) in their response to many of the above criticisms cite an issue with how the individuals offering the criticisms have interpreted the purpose of the NSSE. The NSSE was established to fill a critical void, which scholars in the 1980s and 1990s identified, between theory and practice, so it has been constructed intentionally to be more easily disseminated and utilized by practitioners, which is why the benchmarks exist (McCormick & McClenney, 2012). They are not meant to stand on their own or be utilized as a construct, but are merely a way to make the data more digestible by policy-makers. In addressing these concerns, though, the benchmarks have been changed, as previously discussed (McCormick et al., 2013b).

In regard to diversity concerns, McCormick and McClenney (2012) indicate more minority voices are beginning to be included in the NSSE team with the recent appointment of a Latina scholar in 2010, and they indicate some elements of intercultural effort are included in the instrument. However, the NSSE is not intended be an exhaustive measure of all the ways in which students engage and any and all factors, which may affect such engagement (McCormick & McClenney, 2012). McCormick and McClenney (2012) assert including all of these elements would simply not be realistic or practical, and while a research instrument focused on intercultural engagement would be valuable, it is not the stated purpose of the NSSE.

Pascarella and associates (2010) specifically explored the construct validity of the NSSE

and whether the benchmarks act as good predictors of important educational outcomes. The authors compared the results of the Wabash National Study of Liberal Arts Education (Wabash) to the results from the NSSE. The Wabash consists of a pre- and post-test, and they utilized approved assessment instruments from the Voluntary System of Accountability (VSA) to measure various student outcomes. Since NSSE and the VSA are designed to show aggregated institutional scores, they utilized the same method in this study and did not match individual student scores from Wabash to the NSSE (Pascarella et al., 2010). After comparing the results of the Wabash assessment to the NSSE, they found the NSSE was a valid predictor of positive student outcomes. While they acknowledged they were not able to show a causal relationship from such a relational study, they were able to show a positive relationship exists between how students performed on the Wabash assessment and students' engagement measures on the NSSE (Pascarella et al., 2010). Additionally, Miller (2011) found no statistically significant relationship between a scale measuring social desirability and NSSE responses indicating social desirability would appear to not be a significant factor in how students construct their responses.

McCormick and McClenney (2012) acknowledge using time-use diaries may provide a more accurate means of data collection, but they also cite concerns with how accurate these have been shown to be in the past. Additionally, they contend the accuracy concerns are overblown, as they are based in an inaccurate comparison to empirical tests, where point validity is necessary, but in the implementation of the NSSE, relative comparisons are made, which change how the instrument is utilized (McCormick & McClenney, 2012). Consequently, it is not necessary to be able to ensure every single student answers and interprets every single question in the same manner, but instead to be able to draw generalizable conclusions and make relative comparisons between groups (McCormick & McClenney, 2012). While the NSSE is not a

perfect instrument, the general consensus is it offers the best means of assessing student engagement levels and what actually helps students achieve positive student outcomes, including encouraging persistence to degree completion. However, by better and more fully understanding how students formulate their responses, policy-makers may be better positioned to help these students achieve positive student outcomes.

Contextualizing and Problematizing the Survey Response Process

Kuh and associates (2005) may caution against the addition of programs, but in practicality that is often how the suggestion to engage those who are least engaged is operationalized, as their studies cite more hours and higher levels of engagement to be related to success outcomes (Pascarella & Terenzini, 2005). Programs, though, are not ultimately what will or will not assist students in persisting to graduation, as nothing can "replace the absence of a high quality, caring, and concerned faculty and staff" (Tinto, 1993, p. 201). Faculty, staff, and peer interactions have the strongest influence upon positive student outcomes (Pascarella & Terenzini, 2005). The people surrounding the student are the environment, and a "supportive campus culture" fosters student success (Kuh et al., 2005, p. 171), but what makes an environment supportive?

The literature strongly suggests the importance of the environment in creating conditions for student success, but much of this information is based upon self-reported surveys, which begets the question: are students reliable recorders of their own experiences? Perhaps students are not responding to how involved they are or how engaged they are, but how engaged or involved they are based upon their expectations of the institution and of college in general. Perhaps they are responding to how involved or how engaged they are in relation to their peer group. Peer interaction is a strong influence of academic self-concept, which would suggest students are at least partially utilizing their peers as a baseline of comparison for academic ability (Pascarella & Terenzini, 2005). Is it not probable they are doing the same for other measurements, including what may be considered observed behavior? Astin (2001) cautions "the reader...[to] keep such causal ambiguities in mind when attempting to interpret the results of 'involvement' findings" because of the inherent ambiguities in self-reported surveys (Astin, 2001, p. 79).

While McCormick and associates (2013a) "acknowledge that surveys of student engagement are blunt instruments that yield imperfect information" (p. 64), they also indicate a desire to provide "concrete and actionable" information for university administrators (McCormick & McClenney, 2012, p. 310). Kuh and associates (2005) caution "simply *offering* various programs and services does not foster student success," but the manner in which they present their findings does not always align with such a statement (p. 264). The research literature from the CPR and its collaborators strongly encourages institutions to utilize such information in budgeting, strategic planning, program assessment, accountability reporting, and institutional accreditation (Banta, Pike, & Hansen, 2009; Kinzie & Pennipede, 2009; McCormick et al., 2013a). But, how are they using this information to inform such practice? Is it "concrete and actionable" (McCormick & McClenney, 2012) or "imperfect" (McCormick et al., 2013a)? If the results are treated as actual, objective engagement, universities and colleges would likely operationalize this differently than if they are the perception of a student in an environment – subjective, relative engagement.

Kuh and associates (2005) suggest "most DEEP institutions' NSSE results indicate students read and write more than their peers at comparable institutions," which would indicate they have objectively measured how much students read and write, but they have not done this (p. 183). The NSSE uses self-reported information, and the specific questions to which they are most likely referring ask the students to indicate the number of assigned textbooks, number of assigned readings, and number of assigned papers of various lengths the student has had over the course of the last academic year (NSSE, 2005). Perhaps this is indicative of students *actually* doing more reading and writing, but perhaps it is equally as likely it is indicative of students *believing* they are doing a certain amount of writing, or they are the type of person who would do more writing. Moreover, students indicating they have a set number of assigned textbooks does not necessarily mean they are actually reading those books. As previously noted, the CIRP and the NSSE collect self-reported data to record both "*psychological* data, relating to the internal states or traits of the individual; and *behavioral* data, relating to directly observable activities" (Astin, 2001, p. 9). But, can individuals accurately record their own behavior, or is this in actuality a reflection of their internal state?

Perhaps student responses on the NSSE have more to do with how students perceive their environment or construct their identities than how they actually spend their time. In a study, which utilized both self-reported data and time-use diaries to study church-going behavior in various cultures, researchers found vast differences in the United States between what was selfreported to what was shown on time-use diaries (Brenner, 2012). Brenner (2012) suggests overreporting on surveys is "more than an annoyance..., [but] is a survey artifact...to better understand culturally situated behavior" (p. 378). Over-reporting occurs because people are not responding to "who we are, but rather to who we think we are" (Brenner, 2012, p. 378). Perhaps in this context, the NSSE is properly viewed as an artifact of "storied lives [that] are thus tales of cultural engagement, to the extent that culture is understood as the meaning construction woven in human material contexts and material contexts as people go about and through their lives" (Grant & Zeeman, 2012, p.1). Students "create themselves for themselves while also creating themselves for us" through the NSSE (Butz & Besio, 2010, p. 358).

Does it matter, though, if it is not actually measuring a student's environment if we know "students who report having made learning gains while in college are more likely to persist" (Tinto, 1993, p. 71)? In short, yes, students' perception of their engagement may be what actually matters in how students perform, which would not make the NSSE invalid as a tool to inform practice, but it would affect how it is applied. If the NSSE is being utilized by institutions to gauge effectiveness, knowing how to interpret the results are crucial and a research design comparing engagement reported through time-use diaries and engagement reported through the NSSE may "be valuable to investigate what differences might exist between survey and time diary or time-sampling methods in characterizing the behavior of college students" (McCormick et al, 2013a, p. 63).

Theoretical Framework

This study utilized the theoretical model of the response process proposed by Tourangeau et al. (2000) with primary focus given to how Bronfenbrenner's (2005) human ecology model of development may explain how individuals make inferences about their behavior, and how these inferences may lead to response error. Understanding the processes individuals utilize to respond to requests for information is essential to be able to "determine the particular uses to which our data can be put" (Willis, 2005, p. 256). Consequently, within the past thirty years, the "vital importance of cognition in the survey response process" became more heavily emphasized resulting in "cognitive psychology as a dominant influence in the social sciences" (Willis, 2005, p. 35). With deeper knowledge of the functioning of memory, the cognition process, and the effects of social influences upon response patterns, a more nuanced understanding of the survey

response process has been theorized (Willis, 2005). The resulting interdisciplinary field of study is known as the Cognitive Aspects of Survey Methodology (CASM, Willis, 2005). Previous models of survey response "seem to assume that respondents could answer questions accurately if only they wanted to," but CASM models provide a far more nuanced perspective of how response errors may occur (Tourangea et al., 2000, p. 7). Response error "represents the discrepancy between a theoretical 'true score' and that which is reported by the respondent" (Willis, 2005, p. 13).

Beyond a simple recall and retrieval process, studies rooted in CASM have illuminated the complex processes by which individuals respond to various types of questionnaires and survey instruments. Tourangeau and associates (2000) offer a theoretical model of the survey response process where individuals proceed through a phased, four-stage process to formulate their responses. The phases generally proceed from comprehension to retrieval to judgment to response (Tourangeau et al., 2000). However, since "respondents can carry out components in parallel, because they can backtrack from later components to earlier ones, and because they can completely skip components," the response phases cannot accurately be considered "nonoverlapping stages" (Tourangeau et al., 2000, p. 16). Within each phase, individuals must successfully complete specific processes in order to minimize response error.

Willis (2005) indicates that "people's verbal reports of *why* they have behaved in a certain manner are [sometimes] inconsistent with objective measures of their behaviors" (p. 208). These types of errors most commonly occur when researchers "ask subjects to speculate…about the reasons for their behaviors" because most people are ill-equipped to be able to offer "useful insights" (Willis, 2005, p. 208). Why? Why are most individuals unable to objectively understand and explain their actions? While many factors likely contribute to this inability, the

need for individuals to see themselves in a positive light and reconcile their actions and behaviors with their identity may partially explain this phenomenon. Individuals have "a need to preserve one's self-esteem" (Gonyea, 2005, p. 82), so they may tailor their responses not to intentionally conceal or mislead, but because they have a legitimate need and desire to "present themselves in a positive way at the same time they provide the information needed" (Fowler, 1995, p. 38). Consequently, Schuman (1982) recommends utilizing social psychological theories to understand the survey response process as an artifact of this culturally situated behavior since such differential response patterns may not be illustrative of biases within the instrument, but of the instruments providing substantively different information. Porter (2011) suggests little is currently known about "how students' theories of causality and self-image" and "college context affect survey response" (p. 61). Accordingly, Bronfenbrenner's (2005) human ecology model of development may offer useful insights into how individuals may respond to a survey item based upon the mutually constitutive interplay of the person, the specific process being performed (responding on a survey this instance), the context of the action, and the time in which it is occurring. Specifically, how may the interplay of person-process-context-time explain response error within the survey response process?

Overview of Four-Phase Response Theory

The four-phase response process theory developed by Tourangeau et al. (2000) is "an idealized list" (p. 16) of the cognitive processes a respondent would undertake in responding to a given question. The cognitive loads required in answering a given question are many, but broadly, they are usually placed into the following phases in most response models: comprehension, retrieval, judgment, and response (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). During the comprehension phase, individuals must make meaning of the question being

asked of them, which requires them to "attend to questions and instructions, represent [the] logical form of [the] question, identify [the] question focus (information sought), [and] link key terms to relevant concepts" (Tourangeau et al., 2000, p. 8). In the retrieval phase, respondents must not only "retrieve specific [and] generic memories," but also "fill in missing details," as they are unlikely to be able to accurately recall every experience germane to the question being asked (Tourangeau et al., 2000, p. 8). The judgment phase requires individuals to make decisions regarding the quality of information they have accessed, and consequently, they must make inferences based upon the obtained information to determine what is likely to have occurred (Porter, 2011). Finally, individuals proffer a response in which they must place their inference regarding their memory into a response category and make decisions regarding what information they want to provide based upon the social cues and context (Podsakoff et al., 2000). If each phase is not completed successfully (or if it is skipped completely), response errors are likely to occur (Willis, 2005).

Comprehension phase. The most commonly explored sources of response error occur in the comprehension phase, as researchers and survey designers have often focused upon issues with respondents "understand[ing]...[questions] in a consistent way and in a way that is consistent with what the researcher expected it to mean" (Fowler, 1995, p. 2). Many sources of response error exist within the comprehension phase. First, the language utilized in the question may be too vague; this vagueness allows respondents to have varied interpretations of the languages' meaning, which may result in answers diverging from the researchers' expectations (Tourangeau et al., 2000). The format of the instrumentation can also influence respondents' ability to properly comprehend a question based upon the type of information provided (Bowling, 2005). The amount of detail provided instructions, visual layout, and the segmenting

of questions all provide important information for the respondent about what information is being elicited (Bowling, 2005). Consequently, errors may also occur because of failures or violations of the assumptions underlying the mutually constructive process of information exchange through questions and answers (Tourangeau et al., 2000). Additionally, the underlying assumptions embedded within a question may be false; the conversational conventions embedded in the question and answer process may be violated by the instrument; or the inferences drawn by the respondent about the question may be unintended by the researcher and inaccurate (Fowler, 1995; Schaeffer & Presser, 2003).

Retrieval phase. If respondents successfully complete the comprehension phase, they must then access their memories to retrieve the requisite information, so they can accurately answer the question (Tourangeau et al., 2000). Unfortunately, while individuals are generally able to recall with great specificity and clarity information about landmark events (e.g., funerals, weddings, national tragedies, etc.), respondents often struggle to recall information about the minutiae of their lives (e.g., how many times they have gone to the doctor, number of visits to faculty, hours spent watching television, etc.) (Schaeffer & Presser, 2003). These events are far less likely to be coded and stored for future retrieval by individuals because such behavior is not necessary for the normal functioning of their lives. Consequently, "everyday memories of the sort that surveys usually probe are even more susceptible to distortion" (Tourangeau et al., 2000, p. 81). In a study of the accuracy of reporting sexual behavior amongst college students who identify as heterosexual, Garry, Sharman, Feldman, Marlatt, and Loftus (2002) found students significantly over-reported vaginal and oral sexual experiences, but accurately reported anal sexual experiences. The vaginal and oral sexual experiences, which occurred far more frequently in the dataset, appear to have been less encoded for subsequent information retrieval than the

relatively less frequent anal sexual experiences (Garry et al., 2002). Novelty of experience is a factor in information retrieval.

How then do individuals respond to non-landmark events? Tourangeau and associates (2000) suggest individuals "rely on circumstantial evidence rather than memory for" questions pertaining to non-landmark events (p. 67). Individuals obtain such circumstantial evidence about generalized behavior through scripts, which are "mental representations of commonplace action sequences" (Tourangeau et al., 2000, p. 69). Individuals experience the effects and benefits of scripts in their everyday lives when they grocery shop, drive home from work, prepare for school in the morning, or engage in any number of routine activities. These scripts allow individuals to complete common tasks through the enactment of general patterns without unnecessarily engaging deeply cognitively. While such scripts are beneficial to individuals in their everyday lives, they are problematic when individuals need to recall "information about…individuating details" (Tourangeau et al., 2000, p. 70). How then do individuals formulate responses to request for specific information about an event?

Unfortunately, much of what is reported by individuals is "undoubtedly the result of inference or reconstruction rather than direct experience" (Tourangeau et al., 2000, p. 81). While many reasons exist for failures in factual retrieval, the ultimate result is individuals "resort[ing] to reconstructive processes to fill in what's missing" (Tourangeau et al., 2000, p. 82). This reconstructive process is often problematic, though, as individuals "have difficulty distinguishing what...[they] experienced from what...[they] only inferred" (Tourangeau et al., 2000, p. 82). Fowler (2005) also suggests "it is not reasonable" for researchers to request "information about very small events that had minimal impact" over long durations of time because they are simply not likely to be recalled (p. 22).

Unfortunately, many surveys of student outcomes in higher education cover long periods of time and ask questions about events with minimal impacts, which is likely to result in more errors in the retrieval phase (Porter, 2011). Shortening the window of time in which a person must generate a response is one means to alleviate some concerns with respondents relying on inference, but it will not completely eliminate the need for individuals to make judgments about what likely occurred (Porter, 2011). Another strategy to circumvent problems with extended time periods may be the utilization of time-use diaries, so respondents can report in an on-going basis, which may prevent some of the issues with accessing memories (Fowler, 2005). Even with immediate events, though, individuals often rely upon some level of inference to reconstruct an understanding of what occurred (Tourangeau et al., 2000).

Consequently, on many instruments, respondents are often not responding with what they actually did, but with what they likely did based upon a commonly held script or recent behavior (Porter, 2011). They rely upon contextual information to make their best approximation of what they are likely to have done (Schaeffer & Presser, 2003). Additionally, individuals often rely upon their general knowledge instead of a memory of an actual event to be able to answer questions, which can be problematic. Tourangeau et al. (2000) suggest the following:

Memory for experience is intertwined with general knowledge; similarly, the process of remembering what actually happened is inextricably bound up with the process of inferring what probably happened. (p. 97)

Ultimately, the retrieval process is "the product of a complicated and error-prone judgment process," and a combination of these errors as well as those occurring in the judgment phase may be most unduly influenced by how individuals conceive of themselves (Tourangeau et al., 2000, p. 78).

Judgment phase. As previously discussed, respondents' memories are often spotty, so they must make judgments about the quality of the information retrieved, but these judgments may also result in a myriad of errors due to the nature of their construction. A common source of error occurs when attempting to recall information from specific date ranges or make determinations about the length of duration of an activity (Porter, 2011). When responding to such requests for information "people bring to bear different sources of information and integrate them to derive an estimate" (Tourangeau et al., 2000, p. 109). When judging the quality of memories, individuals make assumptions based upon how easy the recall process was. The more difficult the recall process the longer ago the event is likely to be judged by the individual (Porter, 2011). However, for routine events, the respondent may judge the event to have occurred further in the past than it actually did simply because it was not encoded since it was a non-landmark event (Tourangeau et al., 2000). People also alter responses based upon how they think they are likely to respond or how they should respond, not necessarily with what they actually did (Bowman, 2010). When responding to questions about cognitive gains, students may answer based upon what they assume they are supposed to gain based upon institutional context (Bowman, 2010). Partially, this may be attributable to ego management, as the respondent attempts to reconcile the information with the person they believe themselves to be or believe they should be, but part of this response effect is also likely attributable to the respondent intentionally disregarding information, which they do not believe represents what they do in an "average" week or other specified period of time (Tourangeau et al., 2000).

Respondents utilize "a complex interplay between memory and judgment in responding to....frequency items" (Tourangeau et al., 2000, p. 137). Respondents partially make their assumptions based upon how easily they recalled the information. The assumption from most

respondents is if the information was more easily recalled, then it must be a more common occurrence, and if they cannot recall any occurrences, then it must be a relatively infrequent activity (Porter, 2011). However, the evidence discussed in the previous section about non-landmark events would actually suggest just the opposite may be true. Tourangeau and associates (2000) suggest "a more probable story is that familiarity and recall of specific items both contribute to…frequency judgments" (p. 142).

Individuals also attempt to anchor themselves within the response categories, as they attempt to discern if they are below the norm, at the norm, or above the norm. Schaeffer and Presser (2003) suggest such approximation occurs because respondents consider whatever the middle response to be as the average, and they then estimate if they are above the norm or below the norm. Vague quantifiers are often utilized in place of actual ranges of numbers to attempt to remedy this issue, but vague quantifiers may also have similar issues with what is norm-referenced, and respondents often disagree about what terms such as often, very often, and sometimes mean (Porter, 2011). Qualitative responses may actually further encourage individuals to make judgments about behaviors more so than numerical options because they must first gauge what terms such as sometimes, often, and rarely mean and then discern to which category they likely fit (Fowler, 1995). Ultimately, "information retrieval is not necessarily direct, but rather is reconstructive in nature" (Willis, 2005, p. 38).

Response phase. The final phase of the response process occurs with the respondent actually selecting one of the available options from those provided by the instrument. Within the response phase, individuals have comprehended the question, retrieved the appropriate information, and judged whether it adequately and appropriately answered the question, but they still must select a response, which matches the information they have accessed (Tourangeau et

al., 2000). Consequently, many errors may occur because the available responses do not match the information accessed by the individual. These errors may hearken back to the comprehension phase where the respondent developed a different understanding of the question than the researcher intended (Willis, 2005). An example would be if the researcher wanted information on when an event occurred by proximal date range to the present (e.g., within the last week, within the last month, within the last three months, etc.), but the respondent retrieved the information as occurring after a landmark event such as graduation. The respondent would likely be able to utilize context clues to map his/her retrieved information onto the available responses, but he/she would have to re-enter the retrieval phase to do so (i.e., when was his/her graduation?).

Due to how quickly most respondents, though, complete instruments and the amount of investment they make in fully responding, most individuals are unlikely to re-enter the retrieval phase and are more likely to simply utilize judgment to discern when it likely occurred (Schaeffer & Presser, 2003). This process inevitably leads to rounding and generalizations, as respondents do not take the time to determine specifically when an event occurred or specifically the frequency of an action, but instead round to the nearest number divisible by five (Tourangeau et al., 2000). Many studies indicate this bunching effect, as responses tend to bunch toward these round numbers in ways, which are inconsistent with actual observations (Tourangeau et al., 2000). This bunching phenomenon in behavioral frequency responses may be due to satisficing or producing a response, which seems good enough, meaning the respondent believes this number is likely close to what occurred, but does not require a great deal of time or cognitive demand to produce (Schaeffer & Presser, 2003). Responses also tend to bunch towards the middle due to individuals utilizing a norm-reference of response. The response option in the

middle is assumed to be normative, so many will select it, as they judge themselves to be in the norm (Podsakoff et al., 2003).

Additionally, social desirability bias can be problematic for many researchers, as sensitive information is fluid and changes based upon the individual being studied (Willis, 2005). Sensitivity of a topic is subjective and is likely affected by the identity of the individual, the identity of the researcher, the context of the setting, the outcome of the survey, and so on (Hausman, 2012; Willis, 2005). Alterations in how questions have been worded and ordered have had mixed results in attempting to alleviate concerns with social desirability, but more private response formats (e.g., online surveys, etc.) generally seem to reduce such response bias (Schaeffer & Presser, 2003). Social desirability also encourages respondents to align themselves with norms, or at the minimum to respond in a manner coherent with how they view themselves (Gonvea, 2005). Do they consider themselves to be a hard worker, naturally gifted, detached, etc.? How people see themselves is likely to influence how they respond on an instrument, as they attempt to identify the norm and determine where they want to align within that norm. Further evidence for such response patterns being affected by individuals' identities are evident in the likelihood that they will respond with the extreme response options (Podsakoff et al., 2003). Fowler (1995) suggests "response style may have more to do with people's willingness to choose the extreme response than with differences in the opinions being reported" (p. 66). The strength of people's reported convictions has more to do with their willingness to report these convictions as strong or not, not with how strongly they actually hold them.

Ecology of Human Development

How do respondents form and inform their responses when responding to a survey or questionnaire? What are their bases for inferring what is socially desirable; what is normed; or what is valued? Bronfenbrenner's (2005) bioecological theory of human development may offer a compelling framework for considering how environmental messages may influence the survey response process. This framework has previously been applied to consider ethnic identity development on college campuses (Guardia & Evans, 2008), identity development for students who identify as mixed race (Renn, 2003), experiences of immigrant college students (Stebleton, 2011), and college peer culture in general (Renn & Arnold, 2003) amongst many other applications, but based upon a review of the literature, it has not been specifically applied to the survey response process. Specifically, how may the interplay between environment, person, and time manifest itself in the survey response process?

Bronfenbrenner (2005) describes the ecology of human development in the following manner:

The ecology of human development is the scientific study of the progressive, mutual accommodation, throughout the life course, between an active, growing human being and the changing properties of the immediate settings in which the developing person lives, as this process is affected by the relations between these settings, and by the larger contexts in which the settings are embedded. (p. 107)

These environmental systems range from the most proximal environments, microsystems, to mesosystems, exosystems, and finally the most distal environments, macrosystems (Bronfenbrenner, 2005). Microsystems are comprised of the "face-to-face setting[s] with particular physical and material features" (Bronfenbrenner, 2005, p. 148). After the microsystem, the mesosystem is the next most proximal environment, which is comprised of "the linkages and processes taking place between two or more settings" (Bronfenbrenner, 2005, p. 148). The exosystem is further removed from the individual and also "encompasses the linkage and processes taking place between two or more settings," but one of these settings "does not ordinarily contain the developing person" (Bronfenbrenner, 2005, p. 148). The final and most distal environment is the macrosystem, which "consists of the overarching pattern of micro-, meso-, and exosystems characteristic of a given culture, subculture, or other broader social context" (Bronfenbrenner, 2005, p. 149). Within this system, the more proximal environments are influenced by the more distal environments, as powerful messages are distilled through cultural and social norms and shaped by the interactions with other agents in the environment (Taylor, 2008). These types of messages can be powerful on college campuses and can have a "normalizing" effect to sanction some behaviors, identities, and values, while penalizing others (Taylor, 2008, p. 218).

However, as is intimated by the definition, the ecology model also accounts for both time, labeled the chronosystem, to "account [for] constancy and change not only in the person but also in the environment" (Bronfenbrenner, 2005, p. 119). These events are important in understanding how "they alter the existing relation between person and environment" (Bronfenbrenner, 2005, p. 119). Such life events as graduation, weddings, or divorces may be part of the chronosystem, but it also accounts for larger historical changes, which may occur within a person's lifetime (Arnold, Lu, & Armstrong, 2012). Arnold and associates (2012) offer the great recession of 2008 as an example of an historical moment, which greatly influenced many students ability to afford college tuition.

The model also accounts for the individual "as an active agent who contributes to his or her own development" through cognitive capacities as well as socioemotional and motivational characteristics (Bronfenbrenner, 2005, p. 121). In such a model, people are not simply pawns on a chessboard manipulated through the environment, but also maintain and possess their own autonomy. Through personal instigative characteristics, people help to shape and define their environments, as their environments shape and define them, resulting in a synergistic and dynamic process of developmental change (Renn & Arnold, 2003).

Considering the response process through such a model may provide alternate explanations for some sources of response error. While social desirability seems to be a factor in how individuals respond to an instrument resulting in response error, perhaps the need to align with a social or cultural norm is telling of how individuals conceive of their environments (Gonyea, 2005; Taylor, 2008). What do they view as normal? What is abnormal? Why are certain behaviors desirable? Perhaps, examples of response error are not in fact errors. Brenner (2012) suggests response error on surveys is "more than an annoyance..., [but] is a survey artifact...to better understand culturally situated behavior" (p. 378). Through the lens of the human ecology model, response errors may illustrate how individuals understand themselves as a result of their culturally situated ecological niches.

Ecological niches are "particular regions in the environment that are especially favorable or unfavorable to the development of individuals with particular personal characteristics" (Bronfenbrenner, 2005, p. 111). Understanding these environmental niches and the resulting cues they provide to individuals may prove beneficial in understanding how students respond to their environment. Renn and Arnold (2003) indicate "special mission institutions...attract and support relatively homogeneous student bodies..., that are especially favorable to students whose attitudes are congruent with institutional philosophies" (p. 271). The differential response patterns previously cited for students who identify as African-American or women based upon institutional type may be evidence of the role of these ecological niches.
If we consider the role of inferences in the response process, how might the human ecology model of development help the researcher understand how individuals may respond on the NSSE as a function of their environment? Beyond the human ecology model, theories of social reproduction would certainly highlight the role of the macrosystem in influencing how individuals perceive their environments and regulate themselves as a function of these environments (Bourdieu & Passeron, 1990). Students reporting their behavior through instruments such as the NSSE may be a form of self-regulation. Perhaps students regulate their responses to align with the messages they are receiving within their environment, and these messages likely originate from the prevailing culture of not just the institution, but the environment in which the institution and the students are situated. Bourdieu's theory of social reproduction in education and cultural capital offers a model of how these environmental messages filter to individuals, influence their behaviors, and affect educational outcomes.

Social Reproduction in Education

Cultural capital is "the distance between the cultural arbitrary imposed by the dominant pedagogic action and the cultural arbitrary inculcated by the family pedagogic action" (Bourdieu & Passeron, 1990, p. 30). Bourdieu and Passeron (1990) also indicate the productivity of any pedagogic action is determined by "the distance between the habitus it tends to inculcate...and the habitus inculcated" previously (p. 42). The demonstration of the skills, dispositions, and beliefs valued by this group are what enable an individual to pass through a specific doorway to a specific outcome. The educational system, especially higher education, demonstrates the gate keeping function by the "professorial tendency to maximize the social value of the human qualities and vocational qualifications, which those systems produce, assess, and consecrate" (Bourdieu & Passeron, 1990, p. 146). The process of selection based upon an individual's

attainment of what is valued by the culturally dominant group maximizes human capacity to the benefit of the dominant cultural group because the most valuable and desirable traits are those the dominant cultural group possesses. Beyond this function, though, the educational system also ensures those individuals who may desire to ascend to more culturally dominant positions must do so by signifying they possess the skills, values, and beliefs of the culturally dominant group (Bourdieu & Passeron, 1990).

For those individuals who do make it through the social selection process, their relative merit is then measured by the manner in which they did it. Were they "effortless, brilliant, natural, laboured, tense, or dramatic" (Bourdieu & Passeron, 1990, p. 161)? By defining how an individual progresses through the educational system, an individual can still be classified, which allows the individual to be subjugated in relation to the dominant class. All of this, though, is less a function of the individual's ability, but rather the expectation of the individual, the expectation of those who are in power, and the ease with which the individual navigates the process (Bourdieu & Passeron, 1990). This process of establishing "an educational biography or intellectual biography tends to reproduce the system of objective conditions of which it is the product" (Bourdieu & Passeron, 1990, p. 161). By contextualizing the manner in which an individual who would not be expected to possess the necessary cultural capital to complete his/her degree does so, those who are in the culturally dominant group are able to reaffirm the system. The other function of those individuals, which are able to make it through the system, is it establishes a narrative for success. It provides hope for other individuals to be able to make it through the system, and this hope is used as another mechanization of control (Bourdieu & Passeron, 1990). These cultural messages are likely filtering through students' environments and influencing their ecology, which may also be a factor in the survey response process.

Survey Response Through the Lens of Ecology

So, what may explain how individuals construct inferences during the survey response process and respond on self-reported surveys? Bronfenbrenner's (2005) ecology model of human development may shed some light onto how individuals form these inferences and understand themselves through person-process-context-time. While each person may bring particular experiences shaped over time through their previous ecologies and have personal dispositions influencing how they interact with the world, their specific ecological niches provide signals for how people understand themselves within that environment. This understanding may influence how they respond on self-reported instruments. Gonyea (2005) suggests "there may be factors within individuals having nothing to do with the particular behaviors assessed...that strongly influence how people respond to self-report questionnaires" (p. 81).

The environment signals to the individual who they are, and perhaps they respond accordingly. Fowler (1995) suggests individuals' worldview or philosophical outlook partially explains how they may respond to requests for information since "the more consistent an event was with the way the respondent thinks about things, the more likely it is to be recalled" (Fowler, 1995, p. 22). Perhaps what students are truly answering is less a consideration of what they do, but who they think they are. Figure 1 offers a model of the theoretical framework for this study, which attempts to explain this process. Bronfenbrenner's human ecology model is represented by the series of nested circles with an arrow cutting through them to represent the effects of social reproduction. Within this context, a student must undergo the four-phase survey response process when completing self-reported surveys.

Figure 1. Theoretical Model of Survey Response Process within the Context of a Student's Ecology and Influenced by Social Reproduction



Figure 1. (Adapted from Bourdieu & Passeron, 1990; Bronfenbrenner, 1993; Tourangeau et al., 2000)

Studies on African-American students at HBCUs or women at single-gender institutions may support this type of model. These students report higher levels of cognitive gains, even though objective measures do not necessarily support such a finding (Pascarella & Terenzini, 2005). Why? Why would this be the case? Perhaps this is evidence of social reproduction, and students responding to the messages within their environments. The students at HBCUs or single-gender institutions think of themselves as smarter, more talented, or harder working because their ecological niches provide them with cues to indicate this. This study in many ways is set to answer these types of questions. What do responses about how students spend their time actually tell us about the students? Does it tell us how they spend their time, or how they think of themselves? Understanding this distinction would be beneficial in universities formulating appropriate interventions and responses to assist students. This study is designed to illuminate this response process for this very reason. By contextualizing and nuancing the process, policymakers will have a better understanding of what tale surveys tell – to better understand how the data should be applied to encourage positive student outcomes.

CHAPTER 3: RESEARCH DESIGN AND METHEDOLOGY

Introduction

This study uses a mixed methods research design to more fully understand how first-year undergraduate students' responses on self-reported surveys may be influenced by their social and cultural ecologies. The self-reported survey instrument under consideration for the purpose of this study is the CSR, which is the data source for the NSSE. While the instrument has been shown to have high content validity (Kuh, 2009b), concurrent validity (NSSE, 2012c), predictive validity (NSSE, 2010a), and reliability (NSSE, 2014c), concerns regarding its construct validity have been raised (Olivas, 2011; Porter, 2011). One of the methods suggested, as an avenue to test the construct validity of the instrument, is to compare it to time-use diaries (McCormick et al., 2013a; Porter, 2011). Time-use diaries are less cognitively complex than self-reported surveys because they shorten the time interval between the event under consideration and the survey response (Belli, Alwin, & Stafford, 2009).

Consequently, this study seeks to answer the following questions utilizing a mixed methods design:

- How do students' responses regarding average weekly hours spent preparing for class, engaging in co-curricular activities, working for pay on campus, working for pay off campus, volunteering for community service, relaxing/socializing, caring for dependents, and commuting to campus compare between time-use diaries and the CSR?
- 2. What are the differences in response patterns between the two instruments based upon student demographic characteristics?
- 3. How do students' responses on the CSR and time-use diaries relate to the NSSE Engagement Indicators?

4. Why, if at all, do these differential response patterns exist in this particular college environment?

A Brief Review of Mixed Methods

Mixed methods approaches are appropriate for this study due to the "complexity of...[the] research problems" being posed (Creswell & Plano Clark, 2007, p. 13). Such complex and nuanced research questions require the "combination of both forms of data...[to] provide the most complete analysis" (Creswell & Plano Clark, 2007, p. 13). Utilizing and integrating both quantitative and qualitative data better positions me, as the researcher, to attain a more complete and nuanced understanding of this particular phenomenon (Tashakkori & Teddlie, 2008).

Mixed methods research "combines elements of qualitative and quantitative research approaches...for the broad purposes of breadth and depth of understanding and corroboration" (Johnson, Onwuegbuzie, & Turner, 2007, p. 123). One of the tenants of the mixed methods paradigm is an acknowledgement of the inherent biases present in all forms of research (Green, Caracelli, & Graham, 1989; Tashakkori & Teddlie, 2008). Quantitative analyses generally rely upon a post-positivist lens, whereby a phenomenon can be reduced to their finite parts in order to correctly predict outcomes and control for extraneous variables, while qualitative analyses generally are more constructivist in nature, focusing upon the lived experiences of individuals (Guba & Lincoln, 2011). These two separate perspectives undergirding these forms of research have been coined the paradigm "wars" (Tashakkori & Teddlie, 2008, p. 7). Many researchers view them, as intractable positions with "incommensurable assumptions" (Morgan, 2008, p. 48).

However, the pragmatist view rejects the dichotomy of researcher and researched and subjective and objective, as arbitrary constructs (Morgan, 2008). As opposed to relying upon inductive reasoning from a qualitative approach or the deductive reasoning from a quantitative

approach, the researcher is able to utilize "a version of *abductive* [emphasis in original] reasoning that moves back and forth between induction and deduction – first converting observations into theories and then assessing those theories through action" (Morgan, 2008, p. 58). In such a model, truth is neither singularly universal, nor completely relative (Creswell & Plano Clark, 2007). Instead, the focus within mixed methods is upon intersubjectivity and transferability (Morgan, 2008).

Intersubjectivity emphasizes the "need to achieve a sufficient degree of mutual understanding" amongst all parties involved in the research process in order for it be meaningful (Morgan, 2008, p. 59). Furthermore, it is a "pragmatic response....asserting both that there is a single 'real world,' and that all individuals have their own unique interpretations of that world" (Morgan, 2008, pp. 59-60). Transferability rejects the notion that research can either be so context-bound that no lessons can be drawn from the findings and applied to alternate settings, nor be so universal that they can be applied to any setting. Instead, Morgan (2008) proposes "we always need to ask how much of our existing knowledge might be usable in a new set of circumstances" (p. 60).

By utilizing both quantitative and qualitative data analyses, mixed methods research is a pragmatic alternative, which attempts to address the inherent biases in each type of research (Creswell & Plano Clark, 2007). A useful analogy in considering the benefits of such mixing of data is the flashlight (Weisner, 2014). All research methods have blind spots or assumptions embedded within their paradigms, but by combining multiple methods, the researcher is able to better compensate for blind spots (Weisner, 2014). Just as one flashlight shown upon an individual in the dark will only illuminate one side of the individual and provide an incomplete picture, so does only one methodological paradigm only inform a narrow understanding of one

aspect of a phenomenon (Weisner, 2014). By utilizing multiple forms of data collection and analyses, mixed methods research shines multiple lights upon the phenomenon to further illuminate the nuances and provide a more complete and richer understanding.

Selecting a Research Design

Creswell and Plano Clark (2007) "strongly recommend that researchers carefully select a single design that best matches the research problem" when conducting mixed methods research (p. 79). Considerations in such a selection process include the timing of the data collection, weighting of the data collection, and the manner in which the qualitative and quantitative data will be mixed (Creswell & Plano Clark, 2007). The relative combination and application of these factors result in many typologies of mixed methods studies (Teddlie & Tashakkori, 2009). The most commonly utilized design typologies are the following: sequential explanatory, sequential exploratory, sequential transformative, concurrent triangulation, concurrent nested, and concurrent transformative (Creswell, Plano Clark, Gutmann, & Hanson, 2008). This study utilized the sequential explanatory mixed methods design.

Sequential explanatory mixed methods designs "typically...use qualitative results to assist in explaining and interpreting the findings of a primarily quantitative study" (Creswell, et al., 2008, p. 178). However, relative priority can be given to either the quantitative or qualitative phase of the study. Such a design is chiefly marked by one form of data being collected before the next form of data is collected; hence, it is sequential. Additionally, while the two forms of data can be equally prioritized, priority is generally given to quantitative data analysis with the qualitative data being utilized to further explain the findings of the quantitative analyses; hence, it is explanatory. Lastly, while the quantitative data informed the type of information being

elicited in the qualitative phase, the actual mixing of the data occured in the final interpretation (Creswell et al., 2008).

Strengths and limitations of mixed methods design. The strengths of this approach are primarily in its ease of implementation because it is relatively "straightforward" with one phase preceding the next (Creswell et al., 2008, p. 178). Consequently, methodologies, findings, and interpretations can be discussed in a step-by-step manner, which is often the easiest format for novice researchers like me to utilize. Additionally, this mixed methods approach is often the most acceptable to quantitative researchers because of its "strong quantitative orientation" (Creswell & Plano Clark, 2007, p. 74).

Limitations of this approach are primarily concerned with the length of time necessary to conduct both phases of the investigation and issues with sample selection for the qualitative phase (Creswell & Plano Clark, 2007). Specifically, Institutional Review Board (IRB) approval can be difficult to attain at times because the exact selection criteria for the sample for the qualitative study may not be known since it is often dependent upon the findings in the quantitative phase (Creswell & Plano Clark, 2007). For this particular study, attaining such IRB approval was not difficult because the parameters for sample selection were known in advance of the study.

Rationale for This Study

Sequential explanatory mixed methods is an appropriate design for this particular study based upon the nature of the research questions being asked since neither quantitative nor qualitative data alone would provide a complete picture of how these students' formulations of responses may or may not be a result of systematic response bias, as a function of their ecological niches. Furthermore, Collins, Onwuegbuzie, and Sutton (2006) identified participant enrichment, instrument fidelity, treatment integrity, and significance enhancement, as appropriate rationales for conducting mixed methods research. The two rationales germane to this particular study are instrument fidelity and significance enhancement. Instrument fidelity often is concerned with instruments researchers have designed for their own studies, but "the investigator could assess the validity of information...yielded by the instrument(s) as a means of putting the findings in a more appropriate context" (Collins et al., 2006, p. 77). This study is specifically designed to explore criticisms of construct validity with the CSR, which directly relates to instrument fidelity. Additionally, Collins and associates (2006) define significance enhancement as "mixing quantitative and qualitative techniques for the rationale of enhancing researchers' interpretations of data" (p. 83), which is the rationale for utilizing qualitative interviews in this study. Therefore, the purposes of this particular study align closely with the identified rationales of instrument fidelity and significance enhancement identified by Collins and associates (2006) making this an aptly selected design to investigate this phenomenon.

Data Collection

As a sequential explanatory mixed methods design, this study consists of three distinct phases of data collection. The CSR was administered in the first phase with the time-use diaries being administered in the second phase. All individuals who submitted at least two (2) diary entries were invited to the final phase of the study for individual interviews. The three phases of data collection in the study are represented in Figure 2, which provides a comprehensive overview for the study design. The three phases of sequential data collection are the following:

- 1. Quantitative data collection from the CSR
- 2. Quantitative data collection from time-use diaries
- 3. Qualitative data collection from semi-structured individual interviews

EXPLORING SELF-REPORTED DATA

Figure 2. Overview of Research Design for Study



Figure 2. (Adapted from Creswell & Plano Clark, 2007)

Target Population and Site Selection

The target population for this study is first-year undergraduate students enrolled full-time at a predominantly white institution (PWI) in the northeastern United States. The study was conducted at a single institution, which is a selective, private, four-year liberal arts university, heretofore referred to as Acorn Valley University [pseudonym]. The campus is highly residential with 85% of students living in University owned housing. As of September 2014, 54% of students on the campus identified as female with 46% identifying as male. Thirty-two percent of undergraduate students at the institution identified as being a member of an historically marginalized racial or ethnic group, and 5% were international students. This site was selected due to the nature of highly-selective, residential PWI campuses, which are likely to be the most regimented in enforcing the dominant cultural arbitraries (Bourdieu & Passeron, 1990). Consequently, these campus environments are the most likely to alienate students who do not have the requisite cultural capital to successfully navigate the institutional environment due to socio-environmental factors (Berger & Milem, 1999).

First-year undergraduate students are specifically being targeted because engagement related studies often focus specifically upon this population (Kuh, Cruce, Shoup, Kinzie, & Gonyea, 2008). Additionally, this population is likely to be marked by the most concerns regarding transitional issues, which may impact how they experience the campus environment (Berger & Milem, 1999; Tinto, 1993). Those students who greatly struggle in this environment are likely not to persist beyond the first-year. As an example, Pike and associates (2011) identified differences in engagement patterns by student class year (i.e., comparing first-year students to seniors), but they suggest such differences may simply be a result of omitted variable bias due to student attrition patterns. For these reasons, studying first-year students is essential to better understand how students experience their environments and respond on self-reported surveys accordingly because those students who are most likely to self-censor on a survey instrument may also be the same students who are most likely to not persist to their second-year of enrollment.

Rationale for Sample Size of the Study. To determine the required number of individuals to include in the population sample for the first phase of the study, the type of data analysis and study being conducted were considered (Fowler, 2009) as well as available information on response rates on the CSR (NSSE, 2014d). According to NSSE (2014d), for private institutions, the first-year student response rate is 34%; for institutions located in New England, the first-year response rate is 32%; and for schools with a total enrollment of between 5,000 and 10,000 undergraduate students, the response rate is 22% for first-year students. Furthermore, answering the second research question requires the use of logistic regression with a potential of eight (8) predictor variables. Consequently, at least 100 observations needed to be included in order for it to have consistent predictive probabilities (Harrell, 2001). Based upon all of these factors, the initial recruitment of student participants needed to be sent to at least 286 students.

However, based upon the relative demands of this study, especially with the requirement to complete five time-use diary entries in the second phase of quantitative data collection, the response rate was anticipated to be far lower than the projected estimates. Consequently, the initial recruitment email was sent to 1,000 randomly selected first-year students with those students who identify as being members of an historically marginalized racial or ethnic group being over-sampled to ensure adequate participation to be able to make statistical inferences based upon how the students identify racially and/or ethnically.

As anticipated, the response rate was much lower than the response rate predicted by any of the available metrics with only 166 students starting the CSR, and only 129 students completing the instrument for a completion yield rate from the initial sample of only 12.9%. However, the yield rates for the subsequent phases of data collection became progressively higher. For the second phase of data collection, 67 students completed at least one diary entry for a yield rate of 51.9% of those students who completed the CSR electing to complete at least one diary entry. Furthermore, 27 students participated in an individual interview for a yield rate of 40.3% of those students who completed at least one diary entry electing to participate in an individual interview. The yield rates becoming progressively higher is encouraging, as it indicates concerns with unit non-response bias may be less of an issue affecting the patterns of missing data since the research questions are primarily concerned with how individual students' reporting behaviors are influenced. If students elected to participate in phase one, they largely continued to participate in the study at much higher rates than anticipated. Missing data."

Demographic information for those students who completed at least the CSR is available in Table 2. Of those students who responded, 72.9% identified as women; 35.7% identified as Asian; 10.9% identified as African American; 14.7% identified as Latino/a; and 46.5% identified as White. When compared to the full population at AVU, the demographic characteristics of the respondents do exhibit some disparities, as 53% of the population at the institution identified as women and only 30% of the population identified as a member of an historically marginalized racial/ethnic group. Once again, students with historically marginalized racial/ethnic identity were over-sampled to ensure enough individuals with such identities would participate to use racial and ethnic identity, as predictor variables in the model, so having a disproportionately higher percentage of respondents with such identities in this study, as compared to the general

AVU population was expected.

Table 2	Demographic	Characteristics o	f Sample ((n=129)
$\mathbf{I} \mathbf{u} \mathbf{U} \mathbf{I} \mathbf{U} \mathbf{L}$.				

Characteristics	Number of Cases	% of Total
Gender Identity		
Man	34	26.4
Woman	94	72.9
Another Gender Identity	1	0.8
International Student Status		
International Student	5	3.9
Resident Student	124	96.1
Racial or Ethnic Identity		
Asian	46	35.7
Black / African American	14	10.9
Hispanic / Latino	19	14.7
Native Hawaiian / Pacific Islander	1	0.8
White	60	46.5
Other	2	1.6
Prefer Not to Respond	2	1.6
Disability Status		
Person with a Disability	7	5.4
Person without a Disability	120	93.0
Prefer Not to Respond	2	1.6
Sexual Orientation		
Heterosexual	119	93.0
Gay	1	0.8
Bisexual	6	4.7
Another Sexual Orientation	1	0.8
Questioning or Unsure	1	0.8

Source: Analysis of Data Collected from CSR with Permission from NSSE Note: The racial or ethnic identity variable does not total to 100% because it was not a forcedchoice variable. Students were able to select as many racial or ethnic identity characteristics with which they identified.

Quantitative Data Collection

This study had two distinct phases of quantitative data collection. Initial data-gathering

was conducted by administering the CSR, which is the survey instrument of the NSSE. The

second phase of data collection utilized time-use diaries.

Self-Reported Survey Data Collection. The NSSE is a subsidiary of the Indiana University Center for Postsecondary Research (IUCPR), and an item usage agreement was completed between the dissertation adviser for this study and a representative from the NSSE in order to license the instrument. This agreement requires the researcher to provide descriptive statistics to NSSE on licensed items, denote the permission of Indiana University to use the licensed items on all materials employing data obtained from the instrument, provide NSSE copies of all surveys using licensed items, and provide copies of all materials where the licensed items are discussed or presented. For the purpose of this study, the entire CSR instrument was licensed from NSSE, and it was presented as close as possible in its original format to reasonably approximate the experience of students completing the instrument in their normal environment. See Appendix A for the email invitation to participate in the study and Appendix B for a printed copy of the CSR instrument utilized for this study.

Instrumentation. The CSR is an externally validated instrument with 108 self-reported response questions, including questions about behavioral frequency, demographics, and campus perceptions. These questions cover a variety of topics ranging from hours spent studying, leadership roles in co-curricular activities, the quality of interaction between peers and faculty, and the quality and type of classroom interactions. The response options available to students depend upon the question type, but generally include vague quantifiers (e.g., very often, often, sometimes, and never), range of quantity (e.g., none, 1 - 2, 3 - 5, etc.), likelihood of engaging in an activity (e.g., done or in progress, plan to do, do not plan to do, etc.), and qualitative rating scales (e.g., 1 is poor, and 7 is excellent.).

The CSR is the means of data collection, which is utilized to construct the NSSE, and the NSSE is used by institutions to inform budgeting, strategic planning, program assessment,

accountability reporting, and institutional accreditation (Banta, Pike, & Hansen, 2009; Kinzie & Pennipede, 2009; McCormick et al., 2013a). The theory of student engagement holds the quality and quantity of student involvement patterns (i.e., how they do or do not engage) is impactful in determining a multitude of positive student outcomes, including higher persistence rates, increased cognitive development, and academic success (Kuh et al., 2005). The data garnered from the CSR are grouped into NSSE Engagement Indicators, which are the following:

- Higher-Order Learning
- Reflective & Integrative Learning
- Learning Strategies
- Quantitative Reasoning
- Collaborative Learning
- Discussions with Diverse Others
- Student-Faculty Interaction
- Effective Teaching Practices
- Quality of Interactions
- Supportive Environment

The Engagement Indicators were created using forty-seven of the CSR questions. These questions were selected due to their theoretical relationship with the underlying constructs represented by the Engagement Indicators, and they have previously been both quantitatively and qualitatively tested for reliability and validity (NSSE, 2016). Each question used to create an Engagement Indicator is multiplied by 60, and each component comprising the various indicators are averaged to ascertain the various Engagement Indicators' scores, which can range from zero to 60 (NSSE, 2016). NSSE (2016) provides their SPSS syntax, which was used to create the

indicators for this study. According to McCormick and associates (2013b), these indicators have "strong psychometric properties...useful in supplemental analyses," especially for considering "variability in student engagement that occurs within institutions rather than between them" (p. 10).

The NSSE provides a great deal of evidence to support the CSR as a valid and reliable measurement of student engagement, but questions about its construct validity have been raised (Porter, 2011). Kuh (2009) suggests the instrument has shown high content validity, as it was designed by a committee of higher educational scholars and has been continually refined since its inception to more fully represent the variables of interest. The NSSE and the Beginning College Survey of Student Engagement (BCSSE) are highly related, suggesting high concurrent validity, but even this study cites a great deal of unexplained variance "leaving open the possibility that the greatest influence on student engagement is from factors within the immediate campus environment" (NSSE, 2012, p. 2). Additionally, the NSSE was shown to be a significant predictor of persistence and GPA, indicating predictive validity (NSSE, 2010a), and it had high internal-consistency, which is cited as evidence of its reliability (NSSE, 2014c). However, while NSSE offers some evidence of the construct validity of the instrument, the information is fairly narrowly focused upon a few of the items measured by the instrument, and it does not consider the behavioral frequency questions at all (NSSE, 2010b). Consequently, questions regarding its construct validity have been raised, which is the basis for utilizing it as the instrument of interest in this study (Olivas, 2011; Porter, 2011).

Specifically, Porter (2011) and other researchers have raised questions about the ability of students to accurately remember and report behavioral frequency patterns, and they suggest time-use diaries may be a more accurate method of capturing such information. In reviewing the

78

CSR, while many questions concern the frequency of behaviors (e.g., number of papers assigned of varying lengths, number of books read, etc.), many of these questions are focused upon relatively long time intervals (e.g., over the last semester, etc.) or ask the students to provide their responses using vague quantifiers (e.g., often, sometimes, etc.). However, eight questions ask students to provide their responses using numeric hourly ranges and ask them to recall over a fairly small, finite time period. Consequently, this study focused upon these eight questions since this same type of information can be garnered through time-use diaries. These variables of interest in the first phase of this study are as follows:

- Hours preparing for class in typical 7-day period
- Hours participating in co-curricular activities in typical 7-day period
- Hours working for pay on campus in typical 7-day period
- Hours working for pay off campus in typical 7-day period
- Hours doing community service or volunteer work in typical 7-day period
- Hours relaxing and socializing in typical 7-day period
- Hours providing care for dependents in typical 7-day period
- Hours commuting to campus in typical 7-day period

Students were asked to complete the entire CSR instead of just these eight questions for two primary reasons. First, when conducting cognitive interviewing, presenting the instrument under consideration in the most naturalistic way possible is beneficial in understanding more fully how individuals formulate their responses when completing the instrument under routine conditions (Willis, 2005). Question ordering, fatigue, and other factors can contribute to how individuals respond, so presenting the instrument in the manner in which it is normally completed is important to more accurately understand individuals' reporting behavior on the CSR (Tourangeau et al., 2000). Second, the remainder of the CSR is used to construct the Engagement Indicators. To answer the third research question, information must be garnered from the participants to be able to construct the Engagement Indicators, as outcome variables for the analyses.

Survey administration. The CSR was administered electronically through Qualtrics. Students were sent an initial recruitment email to participate in the study, which included a link to the survey instrument. Administering the CSR through an online format was advantageous because it enabled me to more "economically and effectively...[survey] large numbers of people" (Umbach, 2004, p. 25). Additionally, such formats provide data in more easily analyzable formats since they can be easily transferred to SPSS and other statistical analysis software (Umbach, 2004). However, the most essential rationale for administering the CSR electronically was because this is the manner in which the instrument is administered by the NSSE, which is essential for the final phase of data collection (i.e., the qualitative semistructured individual interviews utilizing aspects of retrospective cognitive interviewing). Since the goal was to understand how students formulate their responses on self-reported surveys, the instrument needed to be administered in the most naturalistic way possible to best approximate the environment in which students normally respond to the instrument (Willis, 2005). The NSSE is most commonly administered electronically through email, which meant utilizing a similar administration technique for this study was warranted.

The initial invitation email was sent on Tuesday, March 10, at approximately 10am. After the initial recruitment email, those students who did not respond were sent two subsequent reminder emails requesting their participation in the study. These reminder emails were sent on Thursday, March 12, at approximately 10am and Thursday, March 19, also at approximately 10am. Such reminder emails were necessary in order to encourage further participation from respondents (Umbach, 2004). According to Umbach (2004), if only one initial email is sent, a response rate of less than 30% should be expected. To increase response rates beyond this level, at least one initial reminder should be sent, but sending two reminders is recommended to maximize response rates (Umbach, 2004).

Time-Use Diaries Data Collection. The second phase of quantitative data gathering was conducted through the administration of time-use diaries in order to gain baseline data to make comparisons to the response patterns of the students on the CSR (Gonyea, 2005). The time-use diaries were administered after the CSR to prevent possible issues with testing effects since using contextual, time-based prompts have been found to be useful in stimulating a more accurate response process on surveys (Willis, 2005).

Pilot of instrumentation. Both the web-based diary entry format and a mobile format were piloted twice. The average response time for the instrument distributed via email was approximately six minutes, and it was approximately 12 minutes on the format distributed via Multimedia Messaging Service (MMS). Retrospective cognitive interviewing was conducted with two separate focus groups to identify any necessary changes to better elicit the required information from respondents and ease the diary response process. This process revealed several modifications for the instrument, which were included in the final design.

The initial pilot study was conducted with four individuals and indicated the following changes: providing clear, tangible examples for respondents about how to complete a diary entry, eliminating some of the response options on the MMS distributed instrument, providing the time intervals for the respondents, and adjusting the administration, so respondents have the instrument at the beginning of the time period to be logged. Consequently, an example of a correctly completed entry was provided at the beginning of each diary for the respondents to be able to reference before they began completing their own diary entries. Time intervals indicating the specific block of time for which the individual was reporting information were also added; the administration of the diary was changed, so respondents received it at the beginning of the data collection window; and, the secondary activity was eliminated from the mobile response platform.

A second pilot was conducted with a group of 35 students within the institution to identify any additional changes or issues with the instrumentation. This pilot contradicted the first one in regard to when the instrument should be distributed. Many of the respondents supplied their schedule and submitted their diary entries before the 24-hour period had been completed. While their schedules may not have changed, if they did, their entries would no longer be accurate, which would seriously undermine the study. Consequently, the timing of the diary distribution was reverted to its original distribution plan – being sent at the end of the 24-hour period. However, to encourage respondents to begin making mental notes about how they are spending their time, a reminder correspondence was also included at the beginning of the 24-hour period.

Additionally, many participants submitted their diaries before they were completed, and they were no longer able to make changes. To address these concerns, the instructions were further clarified and a fail-safe page was added after individuals click submit asking if they are finished with their diary. Having to click submit twice eliminated many concerns about submitting prematurely. Finally, after the pilot phase, the mobile platform was determined to be too difficult for students to be able to complete on their phones. Instead, those students who opted to receive text messages were sent a text message reminder to check their email to complete the time use diary entry. The text message reminders were determined to better fulfill the goal of increasing the response rate without the potential risk of discouraging responses due to the difficult nature of submitting those responses through a mobile device.

Instrumentation. The instrument utilized a 24-hour recall period with 30-minute fixed intervals and was administered through Qualtrics since electronic formats have been shown to have far higher response rates than traditional paper and pencil or structured phone interviews (Bolger, Davis, & Rafaeli, 2003; Shapiro et al., 2008). The 24-hour time interval or yesterday time period is preferable due to the ease of data collection, and respondents are generally successful in being able to report how they structured their previous day (Harvey, 1993). Longer time intervals increase the cognitive complexity of the response process, so they are more likely to increase response errors due to issues in the memory retrieval phase (Harvey, 1993; Willis, 2005). Each diary entry consisted of a matrix of forty-eight fill-in-the-blank response questions divided into 30-minute time-intervals beginning at 9pm on the previous day and ending at 9pm on the day of submission. The students utilized a fill-in-the-blank format to describe the nature of the activity or event. By not providing response options, respondents are free to provide responses not bound by the context of the instrument, so they are less likely to have their responses influenced by the instrument (Belli, Alwin, & Stafford, 2009; Brenner, 2012).

For each thirty-minute time block, the respondents were asked to indicate the event or activity in which they were engaged (e.g., sleeping, studying, meeting with professor, meeting with advisor, etc.), whether the event occurred on or off campus, and any secondary activities in which they were engaged during the primary activity. This type of information was necessary to be able to triangulate the specific type of activities in which students were engaged since the researcher must be able to code and interpret their responses (Bolger, Davis, & Rafaeli, 2003).

Responses were not required for each block of time, and the students were instructed to simply skip any time blocks in which they were still engaged in the activity previously listed. They only needed to log any shifts or changes in their engagement patterns. Additionally, the on or off campus question was a radio-button response with only those two options listed. Finally, as a control mechanism, an additional question was included asking the students if they were ready to submit their diary entry. For a copy of the phase two data collection invitation email, see Appendix C, and for a sample of the time-use diary instrument, see Appendix D.

Time-use diary administration. The time-use diary information was collected over a three week period of time with five, 24-hour time intervals set as the data collection windows in order to generate a representative sum of what a "typical week" looks like for these students. These time snapshots were representative of Monday/Wednesday, Tuesday/Thursday, Friday, Saturday, and Sunday. Due to the manner in which class schedules are constructed on this campus, Monday and Wednesday largely mirror each other, as do Tuesday and Thursday. Consequently, to reduce the relative demands upon the respondents and increase the response rate, students were only asked to complete five total entries, which were utilized to extrapolate information about how students spend their time in a typical week. To further increase the response rate on the diary entries, the final questions on the CSR asked the students if they wished to receive text message reminders to complete their diary entries. Only 32 students elected to receive text message reminders to complete their time-use diaries. Those students who wished to receive such text message reminders were sent them on the same schedule they received the email links to their diary entries. See Appendix E for detailed information about the content of the text message reminders.

Respondents were sent an email (and possibly a text message reminder depending upon whether they indicated a desire to receive such notifications) at 9pm on the date when they were asked to begin logging their activities to remind them they would be receiving their diaries the following day and to encourage them to begin being mindful of their activities. Each diary entry was administered through the Qualtrics system and was delivered to the respondents at 9pm on the day when data collection ends. The 9pm from the previous day to 9pm of the reporting day was selected as the timeframe for several reasons. First, through conversations with students from this campus community, 9pm was identified as a timeframe when most of the students would have completed the vast majority of their daily activities and be in a more settled place where they might be more inclined to respond. Second, 9pm was late enough to primarily encapsulate the activity from one day, but early enough almost all students would still be awake. The possible concern of students having the response time extended, which may have resulted in issues with memory retrieval, were somewhat mitigated by the reminder email for the students to begin considering how they were spending their time.

For students who may not have a responded to the initial diary entry request, at 12pm on the day following when the time-use diary ends, students were sent a subsequent reminder via their chosen communication platform to remind them to submit their diaries. The students were randomly split into two response groups to collect the time-use diary entries. In an effort to increase the response rate, students were only asked to complete five total time-use diaries with the supposition Monday and Wednesday as well as Tuesday and Thursday would be largely similar for the students and could be used as proxies for one another. To ensure these days were similar in their activity patterns, the students were randomly split into two groups, so one group could track their diary entry for Monday while the other did so for Wednesday and likewise for the Tuesday/Thursday group. This comparison process is explained in further detail in the Handling Missing Data section..

The data collection periods of the time-use diaries were as follows:

- For 54 students who responded to the first CSR solicitation (March 10):
 - 1. Finish Monday/Wednesday entry at 9pm on Monday, March 16
 - 2. Finish Friday entry at 9pm on Friday, March 20
 - 3. Finish Sunday entry at 9pm on Sunday, March 22
 - 4. Finish Tuesday/Thursday entry at 9pm on Thursday, March 26
 - 5. Finish Saturday entry at 9pm on Saturday, March 28
- For 53 students who responded to the first CSR solicitation (March 10):
 - 1. Finish Tuesday/Thursday entry at 9pm on Tuesday, March 17
 - 2. Finish Friday entry at 9pm on Friday, March 20
 - 3. Finish Sunday entry at 9pm on Sunday, March 22
 - 4. Finish Monday/Wednesday entry at 9pm on Wednesday, March 25
 - 5. Finish Saturday entry at 9pm on Saturday, March 28
- For 24 students who responded to the second or final CSR solicitation (March 19):
 - 1. Begin Monday/Wednesday entry at 9pm on Monday, March 23
 - 2. Begin Tuesday/Thursday entry at 9pm on Thursday, March 26
 - 3. Begin Friday entry at 9pm on Friday, March 27
 - 4. Begin Saturday entry at 9pm on Saturday, March 28
 - 5. Begin Sunday entry at 9pm on Sunday, March 29
- For 24 students who responded to the second or final CSR solicitation (March 19):
 - 1. Begin Tuesday/Thursday entry at 9pm on Tuesday, March 24

- 2. Begin Monday/Wednesday entry at 9pm on Wednesday, March 25
- 3. Begin Friday entry at 9pm on Friday, March 27
- 4. Begin Saturday entry at 9pm on Saturday, March 28
- 5. Begin Sunday entry at 9pm on Sunday, March 29

This information was utilized in the analysis phase to reconstruct what an "average week" looks like for these students.

Qualitative Data Collection

The final phase of data collection consisted of qualitative individual interviews, which utilized tenants of retrospective cognitive interviewing. Purposive sampling was utilized to select individuals to participate in this phase of data collection with those students who completed at least two diary entries being invited to participate (Palinkas et al., 2013). A total of twenty-seven semi-structured individual interviews were conducted with student participants, which was more than sufficient to provide theoretical saturation (Guest, Bunce, & Johnson, 2006).

The qualitative data was collected through one semi-structured individual interview, which concluded with a section incorporating modified retrospective cognitive interviewing techniques (Willis, 2005). The student participants were asked questions about their experiences within the institutional environment, specifically related to the transition process from high school and their home communities, self-perceptions regarding academic ability, campus environmental supports, peer culture, and other matters theoretically related to students' college ecologies. All of these questions were asked to be able to assist in understanding how the students' identity development within this particular environment informed their response patterns. Additionally, student participants were asked direct probes about how they completed and constructed their responses on the behavioral frequency questions on the CSR. The participants were provided with their responses to the CSR to review, and they were asked questions about how they constructed their responses. While many cognitive interviewing questions were asked, some representative examples include: how did they interpret the various questions; what experiences informed their responses to specific questions; how consistent do they believe their responses would be over time; and, how would their answers compare to their peers? The purpose of this aspect of the individual interview was to understand how the students specifically formulated their responses to the instrument. See Appendix H for a copy of the interview protocol.

Incentives for Participation

The relative time demands of participating in the CSR were not terribly high, so the extrinsic incentive plan did not need to be excessive, but some level of incentive is often useful to encourage participation even if it is not completely necessary (Fowler, 2009). Consequently, the respondents were entered into a drawing to win one of twenty \$10 gift cards to a local burrito restaurant and one of three \$50 Amazon gift cards. However, the demands of participating in the time-use diary phase were relatively high, so the incentives were necessarily more rewarding. The first type of incentive for participation was not monetary, but instead each student participant received an individualized report indicating how they spend their time daily and in aggregate. However, for many students, such a report was unlikely to adequately incentivize participation in this phase of data collection, so more extensive extrinsic rewards were offered as well. After each round of diary entries, those students who participated in that round were

entered into a drawing for a \$50 Amazon gift card. Additionally, gift cards to the local burrito restaurant were rewarded as follows:

- Two Diary Entries: \$5
- Three Diary Entries: \$10
- Four Diary Entries: \$15
- Five Diary Entries: \$20

Finally, those students who participated in the individual interviews were provided with a \$10 Amazon gift card and an additional \$5 gift card to the local burrito restaurant.

Research Permission and Ethical Considerations

First, the study was approved by the IRB before any data was collected from the student participants, and the IRB reviewed all forms of instrumentation, including the CSR, time-use diaries, and interview protocol. This review process helped ensure the research was being conducted in an ethically sound manner. Additionally, the target population was not a high-risk special population, and the demands of the research process were not likely to cause emotional, physical, or mental harm for any of the participants.

The known risk of participation in the quantitative phase of the study involved the opportunity cost of the students who must choose to spend their time engaged in the process, which might prevent them from participating in other activities. However, each student who participated in the time-use diary phase of the study was provided with individualized reports of their daily behavior as well as their average and cumulative weekly behavioral patterns both as a form of member-checking as well as a means to incentivize their participation.

Additionally, students who were asked to participate in this study completed three separate informed consent forms corresponding to the particular phase of the study in which they

were participating. See Appendices B, C, and G for these informed consent forms. While it was highly unlikely the questions posed during the individual interview would cause the students' emotional or mental distress, the students were reminded at the beginning of the interview that the process was completely voluntary, and they did not have to answer any questions if they did not wish to do so. Finally, all student responses were kept confidential, and the reporting of any findings utilized pseudonyms for student participants, institutions, and programs.

Role of the Researcher

With a study such as this, I am necessarily in and of this study. My particular role was less active during the quantitative data collection, but with the analysis of the time-use diaries, I coded the students' entries, which means I necessarily interpreted the information they provided. Once again, member-checking was utilized with the students to determine if my interpretations of how they were spending their time based upon their diary entries was correct (Marshall & Rossman, 2011, p. 221). I only received three responses from the student participants. Two were simply emails to express gratitude, but one student, Jacob, who identifies as male and African-American offered the following thoughts on his diary entry tabulations:

It's hard to imagine how much time I spent studying and participating in clubs last year, though I felt like I worked a lot more hours for my on campus job, but as far as the relaxing and socializing, I might not have played video games or watched television at all, but I definitely spent a few hours per week socializing with friends from my clubs or around my building.

I worked for Athletics, but I normally worked on weekends. It could have been a dry spell of there just not being any games I was assigned to on the weeks I did my entry. (Jacob) Jacob does express some concern with how many work hours and co-curricular hours were counted for him, but the remainder of the participants do not voice any such concerns. Consequently, his diary entries were re-reviewed to see if any changes needed to be made, but none were evident from his entries. Ultimately, my personal interpretations were necessarily part of the study.

In the qualitative phase of the study, I co-constructed meaning with the student participants through the semi-structured interview process (Marshall & Rossman, 2011). I constructed the interview protocol; I selected the verbal probes to be utilized; and I interpreted the students' responses when I analyzed the interviews to search for emergent themes and the broad themes, which were pre-selected based upon the theoretical framework. Once again, member-checking and triangulation were utilized to ensure trustworthiness, but ultimately, this is my study and will necessarily reflect my subjective experience. While I utilized reflexivity to consider my own positionality within the research throughout this process (Rossman & Rallis, 2012), I can never fully remove my own beliefs, values, and perspective from this process, nor would I want to do so. Mixed methods rejects the notion of "objectivity," and instead strives for transferability and intersubjectivity (Morgan, 2008). Through the steps put in place with member-checking, triangulation, and reflexivity, I believe I have achieved the requisite level of transferability and intersubjectivity for this to be a successful mixed methods study.

Analyzing the Data to Answer the Research Questions

Four distinct phases of analyses were conducted to answer the research questions. The first research question was addressed through quantitative analysis utilizing a Wilcoxon Signed Rank Test. For the third research question, Engagement Indicators were created utilizing syntax made available from NSSE (2016) to be the dependent variables. Since these Engagement

Indicators are interval level data, hierarchical linear regression was the appropriate statistical technique to answer the third research question (Pallant, 2013). Specifically, the response patterns from the diary entries were utilized as the first forced entry block, and the response patterns from the CSR were utilized as the second forced entry block to compare the R-square change in a linear regression model. Due to the limited number of cases in the dataset, only six total predictor variables could be utilized, and even this number is slightly more than those indicated by accepted guidelines (Stevens, 1996). Consequently, only the variables, which should theoretically have a positive relationship with the engagement indicators, were included: class preparation, co-curricular involvement, and community service. The final research question was primarily answered by analyzing the individual interviews to consider why these patterns may be occurring in the data with full interpretation required a mixing of the data. Specifically, how did the experiences of those students who under-report their behaviors compare to those students who accurately report or over-report their behaviors?

Quantitative Analyses

The primary emphasis in this study is placed upon the quantitative data analysis with it being utilized to answer questions one, two, and three. Before the data could be analyzed, though, quite a bit of data cleaning and preparation had to be completed.

Data Preparation. Once all the data was collected, the diary entries had to be recoded for analyses; missing data had to be addressed; NSSE engagement indicators had to be computed; levels/categories of variables had to be collapsed; and some variables had to be removed from further consideration due to a lack of variability in the dataset.

Recoding Diary Entries. The diary entries had to be interpreted and coded, so they would match the available response options on the CSR. A total of 315 diary entries were

reviewed and initially coded using in vivo coding, which resulted in 165 differently labeled activities and events. In this initial phase of coding, all entries were coded and counted unless they were clearly a bodily, essential function (e.g., sleeping at night, showering, etc.) or class time since both activities are clearly not included as one of the eight-variables of interest listed on the CSR. In the second phase of analysis, the three points of data for each 30-minute time interval were utilized to refine the coding process according to a simple decision tree, which is available in Figure 3.

First, if only one activity occurred, which could reasonably be aligned with one of the eight-variables of interest, that segment of time was placed into its applicable category without any further consideration. Second, for some variables only one primary activity was listed, but the on-campus or off-campus status was necessary to determine if the activity should be counted as co-curricular or not and whether or not it was an instance of working for pay on-campus or off-campus. As an example, religious activities were very commonly cited events in the dataset. If these activities occurred on-campus, they were considered co-curricular activities, but if they occurred off-campus, they were not counted as any of the eight-variables of interest. These activities were then placed into one of the eight categories. These first two steps were relatively straightforward and required little analysis or reconciliation to complete, but for instances of multiple countable activities being listed concurrently, more in-depth analyses was required.

When two activities were listed that could both be reasonably counted in one of the eight variables of interest categories listed on the CSR, they were first analyzed to determine if they would be categorized separately or together. If two activities were listed together that would both be considered part of the same category (e.g., watching television as primary and chatting with friends as secondary), those hours were only counted once, so they would not unduly weight any

one category. If two activities from separate categories occurred simultaneously, the types of activities occurring were analyzed to determine if one was clearly the primary activity, which should be counted, or if they were the types of activities, which would both likely be counted by the respondent. The chief consideration in this process was the relative desirability of the activities in question and the order in which the student listed them with the underlying thought process to code as cautiously as possible.

If two activities, which would be placed into two separate categories, occurred simultaneously, they were only counted separately in their respective categories if they were both activities the student was unlikely to enjoy. If one activity was less desirable (e.g., studying, reading for class, etc.) and a more desirable activity (e.g., listening to music, chatting with friends, watching television) was listed as the secondary activity, only the primary activity was counted. As an example, if the individual listed "studying for exam" as the primary and "chatting with friends" as the secondary, only the studying for exam was counted. However, if the individual listed "riding the train" and "reading for class" in that order, they were both counted in their respective variables of interest. This coding method was supported by the manner in which the students indicated the primary and secondary activities in their diaries. If a "preparing for class" activity and a "relaxing and socializing" activity were listed simultaneously, the "preparing for class" activity was nearly universally listed as the primary. However, in instances of "commuting to campus" activities and "preparing for class" activities, they were much more likely to be listed in either position.




Finally, in some cases the secondary activity allowed the combination of activities to better place them in the correct category. The most commonly cited dual activity in the dataset was eating as the primary activity and chatting with friends as the secondary activity. This was combined into the code of "ate with friends" and was included as part of the "relaxing and socializing" category, but if it was just eating without anything else listed, it was not counted as one of the eight variables of interest and was considered an essential, bodily function. As the final step, once all of these coding choices were made, the hours for each activity were placed into one of the eight categories listed on the CSR.

To ensure the reliability of this coding method, another individual provided a secondary review. This individual randomly recoded twenty diary entries, and she found high levels of inter-rater reliability between her coding and mine. As a final check of the coding process, I recoded all the diary entries only utilizing the eight theme categories aligned with the variables of interest to ensure the behavioral patterns matched those initially found in the dataset using in vivo coding. Once again, this process found high levels of consistency in the coding of the diaries (Rossman & Rallis, 2012).

Handling missing data. Due to the complexity of the data collection process and the types of data available, multiple methods were utilized to handle missing data. First, for the diary entry responses, some data points were missing intentionally. As previously discussed, in an effort to increase the response rate, students were only asked to complete Monday or Wednesday, not both, and the same response pattern was used for Tuesday and Thursday. To ensure the behavioral patterns on Monday are similar to those on Wednesday, and those on Tuesday are similar to those on Thursday, the sample was randomly split using Qualtrics into two subsamples with different implementation schedules. Seventy-eight respondents were

randomly assigned to respond for Monday/Wednesday based upon Monday and Tuesday/Thursday based upon Thursday, and 77 respondents were randomly assigned to respond for Monday/Wednesday based upon activities from Wednesday and Tuesday/Thursday based upon Tuesday. An independent means T-test compared the response patterns between these two sub-samples for all eight variables of interest, and it indicated they were not statistically significantly different from one another on any variable, as shown in Tables 3 and 4. Consequently, a simple substitution of the planned missing day with the available day from Monday/Wednesday and Tuesday/Thursday was used to calculate how many hours a student spends in a typical seven-day week engaged in the variables of interest.

1 0	<i>J</i> 1	<i>. . . .</i>	~	
Variable	Monday	Wednesday	t(59)	
Preparing for Class	4.29	4.74	-0.615	
Participating in Co-				
curricular Activities	1.49	1.40	0.212	
Working On-Campus	0.21	0.30	-0.425	
Working Off-				
Campus	0.00	0.17	-1.000	
Community Service	0.05	0.13	-0.715	
Relaxing &				
Socializing	3.53	3.09	0.644	
Commuting	0.18	0.20	-0.063	

Table 3. Comparing Means of Behavioral Frequencies for Monday and Wednesday

Table 4. Comparing Means of Behavioral Frequencies for Tuesday and Thursday

Variable	Tuesday	Thursday	t(59)
Preparing for Class	4.89	5.47	-0.816
Participating in Co-			
curricular Activities	1.52	1.34	0.358
Working On-Campus	0.60	0.25	1.068^{1}
Working Off-			
Campus	0.00	0.00	0.000
Community Service	0.13	0.10	1.548
Relaxing &			
Socializing	3.42	2.42	1.548
Commuting	0.10	0.26	-0.702

¹ Levene's Test for Equality of Variance violated, so the t-test statistic assuming unequal variance is reported.

Second, two additional variables were computed to analyze missing data resulting from unit non-response for the diary entries. First, a ratio-scale variable with interval level data was computed to count the number of diary entries each participant submitted, which could range from zero entries submitted to five for each case. This variable and the categorical demographic variables for each participant were analyzed using Little's (1988) test to determine if the data was missing completely at random (MCAR). Little's test was not statistically significant (α =.05, p = .366), so the null hypothesis was retained, which indicates the data may plausibly be considered to be missing completely at random.

However, to further confirm the pattern of the missing data, a binary dummy variable was computed to indicate whether the student elected to participate in the second phase of quantitative data collection or not. This binary variable was created by combining the students who completed one, two, three, four, or five diary entries into one level with those students who completed zero diary entries being the other level. Descriptive statistics for participation patterns by demographic variables were reviewed and analyzed using a chi-square analysis. As shown in Table 5, the participation rates of the students did exhibit some differences according to the descriptive statistics. Of those students who did not submit any diary entries, 64.7% identified as men compared to only 45.7% of unit non-respondents for the diary entries identifying as women. Furthermore, 64.6% of students who identified as White did not respond, and only 35.7% of students who identified as African-American as well 45% who identified as Asian did not respond.

This review suggests the variables may not be missing MCAR, and they are instead likely missing at random (MAR), as they do appear to have some relationship to other observed

variables in the dataset (Graham, 2012). However, none of these differences, though, exhibited any statistically significant relationships between unit non-response and gender ($\chi^2 = 4.556$, p = .102), racial or ethnic identity ($\chi^2 = 5.505$, p = .239), disability status ($\chi^2 = 1.217$, p = .544), or sexual identity ($\chi^2 = .088$, p = .767). Consequently, the chi-square analyses coupled with the results of Little's test supports the use of simple listwise deletion, as an appropriate method to handle missing data (Graham, 2012; Schlomer, Bauman, & Card, 2010). As a result, simple listwise deletion was utilized for any respondents who had complete unit non-response for the diary entries, and those cases were removed from further analyses.

Characteristic	% Missing	Chi-Square
Gender Identity		4.556 (df = 2)
Man	64.7	
Woman	45.7	
Racial or Ethnic Identity		5.505 (df = 4)
Asian	45.0	
Black / African American	35.7	
Hispanic / Latino	50.0	
White	64.6	
Multi-Racial or Other	46.7	
Disability Status		1.217 (df = 2)
Person with a Disability	71.4	
Person without a Disability	50.0	
Sexual Identity		.088 (df = 1)
Heterosexual	50.4	. ,
LGBTQ	55.6	

Table 5. Percentage of Cases that did not Submit Any Diary Entries for Selected Characteristics within Dataset

Third, simple listwise deletion for those cases which completed at least one diary entry, but not all five, was rejected because it would eliminate too many cases to perform logistic or linear regression with the desired number of predictor variables (Harrell, 2001; Hosmer et al., 2013; Stevens, 1996). Of those students who participated in the second phase of quantitative data collection, only 48 students completed all five diary entries, but eight completed four, three completed three, one completed two, and seven completed one. Multiple imputation was initially utilized to address the missing data. However, after implementing it and reviewing the resulting datasets, it was rejected because it removed too many cases for the analyses to converge. The resulting pooled datasets from the multiple imputation were insufficiently powered to be able to include the desired number of predictor variables to answer questions two and three.

When the amount of data missing is high, multiple imputation is often the best approach because it produces much less bias into the dataset since it introduces random variability (Graham, 2012; Puma, Olsen, Bell, & Price, 2009). For this dataset, though, only 17.9% of the data was missing, and as previously discussed, the data was determined to be MAR (Graham, 2009). As a result, hot deck imputation has been recommended, as an appropriate method to handle such missing data because it also introduces random variability, but affords the ability to include more cases for analyses than multiple imputation (Myers, 2011). Multiple imputation is only absolutely recommended when the data are found to be missing not at random (Myers, 2011).

For hot deck imputation, the deck variables have to be those, which are theoretically associated with the phenomena under consideration, but are not going to be used, as part of the analyses to answer the research questions (Myers, 2011). For this study, the variables selected for the deck variable were age, number of courses being taken, and the educational aspirations of the student. These variables were not utilized in the analyses, and they should have a relationship with the other variables under consideration in the dataset. Pike (1999) found significant halo effects for first-year students on surveys measuring self-reported gains with related topic areas being strongly correlated with one another.

A weakness of hot deck imputation is some cases may not have any other similar cases from which to draw data, and within the dataset, listwise deletion had to be utilized for a few variables of interest, as some cases did not have enough available information provided to identify similar cases from which to draw information (Myers, 2011). However, hot deck imputation is still the best available means of handling missing data in this set because it allowed the inclusion of far more cases than would have been possible had simple listwise or pairwise deletion been utilized throughout the dataset. Only approximately four cases were lost for the binary logistic regression to answer the second research question, while pairwise deletion would have eliminated over twenty cases, which would have seriously undermined the statistical power of the analyses.

Computing, recoding, and eliminating variables. The data from the diary entries then needed to be reconfigured to match the data available from the CSR. Consequently, a cumulative total variable was calculated for the eight variables of interest, which was then recoded to be ordinal level data, so it would match the data available from the CSR. To perform the Wilcoxon Sign Ranked Test, dependent data has to be in the same scale and must be at least ordinal level data (Pallant, 2013). Additionally, after an initial review, caring for dependents had to be dropped entirely since no one reported any activities in their diary, which could reasonably be interpreted to fit this category.

Furthermore, some variables required the combination of levels to be able to include them in the analyses due to a lack of variability in the dataset. Other variables had to be eliminated because not enough variability existed to include them in the analysis. In order to adhere to the recommendation of having at least fifteen cases per predictor variable in a binary logistic model, only five predictor variables could be included to answer research question two (Stevens, 1996). Table 6 shows the percentage of cases for each predictor variable after categories and levels were combined to ensure at least five cases were present for each level or category of a variable. After the various levels were combined, 25.4% of respondents indicated regretting their school choice (i.e., they would be unlikely to start over at the same institution if they could redo their college choice.) while 74.6% indicating being satisfied; 18.5% of students would be classified as first-generation college students (i.e., their parents have an Associate's Degree or less); 81.5% identified as a woman; and 35.4% identified as Asian. These categories would be further collapsed to answer some of the research questions, but these provide a general overview of the demographics of the respondents.

Table 6. Predictor Variables

Predictor Variable	Number of Cases	Valid % of Total ¹
Would you start over at the same institution? (n=67)		
Definitely No or Probably No	17	25.4
Probably Yes or Definitely Yes	50	74.6
Highest Degree Earned by Parents (n=65)		
Associate's Degree or Less	12	18.5
Bachelor's Degree	14	21.5
Master's Degree	26	40.0
Doctorate or Professional Degree	13	20.0
Racial or Ethnic Identity (n=65)		
Asian	23	35.4
Black / African American	9	13.8
Hispanic / Latino	7	10.8
Multiracial	8	12.3
White	18	27.7
How have most of your grades been? (n=65)		
А	10	15.4
A-	20	30.8
B+	17	26.2
В	7	10.8
B- or Lower	11	16.9
Gender Identity (n=65)		
Man	12	18.5
Woman	53	81.5

Source: Analysis of Data Collected from CSR with Permission from NSSE

¹ The valid percentage of total does not include missing cases.

Additionally, a differential response variable had to be computed to answer the second research question. This variable was created by obtaining the difference between the response category indicated on the CSR and the response category indicated on the diaries. These response patterns were then condensed into two levels in order to have sufficient number of observations in each bivariate relationship to conduct statistical analyses, which resulted in a level for those who under-report and one combined level for those who accurately report and over-report for each variable of interest. Finally, the NSSE (2016) Engagement Indicators were created to use, as the outcome variables to answer the third research question. SPSS syntaxes made publicly available by the NSSE were used to create the Engagement Indicators (2016). To ensure their reliability when applied to this dataset, their Cronbach's Alphas were obtained. All of the Engagement Indicators were found to be reliable (Collaborative Learning = .775, Reflective and Integrative Learning = .863, Student-Faculty Interaction = .671, Higher-Order Learning = .814, Effective Teaching Practices = .685, Quantitative Reasoning = .799, Discussions with Diverse Others = .739, Learning Strategies = .670, Quality of Interactions = .650, and Supportive Environment = .844).

Data analysis. Three separate research questions were answered using quantitative analytical techniques.

Answering the first research question. The totals for the six remaining variables of interest were compared using a Wilcoxon Signed-Rank Test to compare clustered data, which is non-parametric (Randles, 1988). This test is appropriate for this analysis and to answer this first research question because the data points are paired (i.e., each individual had a response from the CSR and the time-use diary for each variable of interest) and the variables of interest were

ordinal and therefore, non-parametric (Siegel, 1956). This analysis examined whether a statistically significant discordance was present between the two instruments for each variable of interest, and if it is, indicated both the magnitude and direction of the discordance (Siegal, 1956). The null and alternative hypotheses (α =.05) for the first research question are as follows:

$$H_0: M_{Di} = 0$$

 $H_0: M_{Di}^{-1} 0$

The data being interpreted for the first research question are all ordinal level, and statistical analyses for such data are far more robust and have far less assumptions than those using interval or ratio-level data (Pallant, 2013). To ensure, though, that the assumptions of the Wilcoxon Sign Ranked Test were not violated, descriptive statistics, univariate distributions, and bivariate distributions were analyzed for all variables in the model (Hosmer, Lemeshow, Sturdivant, 2013). This analysis resulted in the collapsing of categories or levels to have sufficient number of cases in each category to conduct the analysis and other variables had to be dropped from the model due to a lack of variability, as previously discussed (Graham, 2012; Hosmer et al., 2013; Pallant, 2013).

Answering the second research question. The second research question was initially planned to be answered using ordered logistic regression, but due to a lack of variability in the dataset over and accurately reporting behavior had to be combined into one level, as students generally under reported far more than they over reported for each of the variables of interest. Specifically, within the dataset, only five students over reported class preparation time, eleven over reported co-curricular engagement, ten over reported working for pay on campus, four over reported working for pay off campus, six over reported relaxing and socializing, and seven over reported commute time. Eighteen students did over report time spent engaging in community service with only eight students under reporting their experiences for this variable. However, since under reporting behavior was far more common than over reporting behavior within the dataset, accurately and over reporting were combined into one level since being able to meaningfully detect differences in logistic regression requires at least five observations to be present for each bivariate relationship (Hosmer et al., 2013). Combining these levels resulted in only two levels of differential responses (i.e., under-report and accurate/over-report), which made binary logistic regression the appropriate statistical analysis tool (Agresti, 2013).

Based upon the theoretical model for this study as well as the information available from CSR, student demographic characteristics, which may influence a student's ecologic niche were selected as predictor variables to answer the following question: what are the differences in response patterns between the two instruments based upon student demographic and input characteristics. Based upon the theoretical framework, the following variables were utilized, as predictor variables:

- Academic Performance as Measured by Reported Grades
- Educational Level of Parents
- Gender Identity
- Racial or Ethnic Identity
- Would the individual attend the same institution?

In this phase of analysis, the differential response rates between the two instruments for the students' responses were utilized as the dependent variable. Each student had a differential response score for each variable of interest, but once again, due to a lack of variability across the response categories, they were collapsed into two levels (i.e., under-report and accurate/overreport). These differential response scores were utilized individually as the outcome variable, and they were utilized in aggregate as well to understand how student demographic characteristics may result in systematic under-reporting. Binary logistic regression was utilized to explore what may explain differential response patterns within the data (Hosmer et al., 2013). The statistical equation used for the model and the statistical hypotheses (α =.05) are the following:

$$\log \frac{\Pr(Y = under)}{\Pr(Y = accurate / over)} = \alpha + D_{grades} x_1 + D_{parent} x_2 + D_{gender} x_3 + D_{race} x_4 + D_{inst} x_5$$
$$H_0: D_{grades} \cdots D_{inst} = 0$$
$$H_1: D_{grades} \cdots D_{inst} \neq 0$$

While binary logistic regression is relatively robust with less assumptions than OLS regression, the model is still sensitive to issues with multicollinearity and extreme scores, so variance inflation factor (VIF) were reviewed to detect issues with multicollinearity and the distributions were reviewed for outliers (Pallant, 2013). The VIF and tolerance value to identify any issues with multicollinearity were as follows for the predictor variables: gender identity (VIF = 1.122, tolerance = .891), race/ethnicity (VIF = 1.156, tolerance = .865), first-generation status (VIF = 1.326, tolerance = .754), grades (VIF = 1.352, tolerance = .740), and likelihood to attend same institution (VIF = 1.018, tolerance = .982). The recommended cutoffs to identify issues with multicollinearity are 10 for VIF or less than .10 for tolerance (Pallant, 2013). Consequently, no issues with multicollinearity were detected.

Answering the third research question. The third question was answered by utilizing the NSSE Engagement Indicators, as outcome variables, and utilizing forced block entry in a multiple hierarchical linear regression model to analyze the R-square change. Due to the limited number of cases available in the dataset, only six total predictor variables could be included, so only those variables likely to be associated with the NSSE Engagement Indicators were analyzed. The predictor variables selected for analysis were time spent preparing for class, engaging in co-curricular activities, and engaging in community service.

By analyzing the r-square change between models, the amount of unique variance explained by the CSR can be examined to determine, which model better fits our data. Logically, if reporting behaviors on the CSR are related to reporting behaviors on the diaries, which they should be if they have construct validity, then they will have high levels of multicollinearity and provide very little further explanation of the variance. In such a case, the second model with the response patterns from the CSR included should have a statistically insignificant R-square change value. Additionally, the regression coefficient for each predictor term was analyzed to determine which of the predictor variables are statistically significantly related to the Engagement Indicators when controlling for the other variables in the model. Finally, a chisquare goodness of fit analysis was conducted to determine which model better fits the data. The equations for the comparison models are as follows:

$$Y_{i} = \alpha + \beta_{DiaryCP} x_{1} + \beta_{DiaryCoCur} x_{2} + \beta_{DiarySer} x_{4}$$

$$Y_{i} = \alpha + \beta_{DiaryCP} x_{1} + \beta_{DiaryCoCur} x_{2} + \beta_{DiarySer} x_{4} + \beta_{CSRCP} x_{7} + \beta_{CSRCoCur} x_{8} + \beta_{CSRSer} x_{10}$$

The statistical hypotheses (α =.05) for these analyses are as follows:

$$H_0: R_{Change}^2 = 0$$

$$H_1: R_{Change}^2 \stackrel{1}{} 0$$

$$H_0: b_i = 0$$

$$H_1: b \stackrel{1}{} 0$$

$$H_0: Observed = Expected$$

$$H_1: Observed \stackrel{1}{} Expected$$

The assumptions of linear regression (i.e., multicollinearity, outliers, normality, linearity,

homoscedasticity, and independence of residuals) were tested and no issues were identified.

Qualitative Analysis and Mixing the Data

The final question was primarily answered through qualitative interviews. While the first two phases of the study rely predominantly upon quantitative analyses, the final phase of the study utilizes qualitative data to explain the findings of the first two phases and mixes the data to provide a more nuanced and complex understanding of the findings. Mixed methods is appropriate for this type of design because it affords this type of mixing of data in the interpretation phase. The final phase of an explanatory sequential mixed methods design is to mix the data to better and more fully address the research questions. Specifically, in this study, an analysis of the multinomial logit regression coupled with the analyses from the qualitative interviews was utilized to develop a fuller understanding of how identity factors (e.g., racial, ethnic, sexual, gender, first-generation status, etc.) and environmental factors influence how students respond on the survey instrument. The qualitative data was coded utilizing HyperResearch to identify emergent themes from the student interviews. For the initial phase of coding, I utilized eclectic coding to employ a variety of coding methods to capture as accurately as possible the students' experiences of their campus environments and attempt to understand how these may be influencing their response patterns. The first phase coding methods used a combination of in vivo coding to be able to more accurately reflect the students' voices (Saldana, 2009). Additionally, process coding was utilized to ascertain what the students are experiencing and doing on campus as well as values coding to reflect how the students are making meaning of these experiences (Saldana, 2009). This process, though, was iterative, so it shifted based upon what began to emerge from the data (Saldana, 2009).

These codes were utilized in the secondary analysis of the data to identify themes or broad categories (Saldana, 2009). These themes afforded me the ability to better understand how students' perceptions of their environments may shape their responses on the CSR. To ensure trustworthiness of the data, member-checking with the student participants was utilized (Rossman & Rallis, 2012). Additionally, one interview was cross-coded by a faculty member to ensure trustworthiness. Finally, one of the chief benefits of a mixed methods design is its emphasis upon convergence and divergence, which affords the researcher the ability to triangulate qualitative findings (Creswell & Plano Clark, 2007).

Limitations and Delimitations

This study is being conducted in a particular environment, so any findings must be understood as being reflective of that particular environment. Consequently, while the findings may offer meaningful suggestions regarding the validity of the CSR and how students inform their responses to it, these same findings may not hold true on different campuses. As an example, students with historically marginalized racial identities may systematically under-report in this environment, but that does not necessarily mean they will always under-report in all environments. To more fully understand the response process and make generalizations to the larger population, the study would need to be replicated to verify any findings. The study is limited to deepening our understanding of how these particular students inform their responses through their particular socially constructed ecology.

Additionally, I am necessarily of and in this study, and I mutually constituted meaning with the students through my own socially constructed ecology, which inevitably influenced the findings. While member-checking, coder reliability, and triangulation with the quantitative data enabled some level of trustworthiness within the data, the researcher, as the instrument of the study, ultimately influenced any findings. To argue otherwise would be disingenuous since one of the primary arguments for this type of study was the inherent subjectivity, which is an aspect of all human experiences. I investigated how students' subjective processes influenced how they responded on "objective" measures, and based upon the prevailing literature, I hypothesized student responses would be heavily influenced by their subjective processes. Assuredly, my

subjective processes also affected this study. To somewhat mitigate and account for such issues, reflexivity was used to continually gauge and track my value positions, as the researcher, throughout the data collection and analysis process (Rossman and Rallis, 2012).

Additionally, some level of selection bias was likely, as those students who chose to participate and continued to participate may be fundamentally different than those students who choose to not participate or discontinue participation. However, the study is focused on how students construct their responses, which all individuals to some degree must necessarily do. Consequently, while it is certainly possible that the students who chose to discontinue participation may be systematically different than those students who remain in the study, the findings would not be nullified by this. Furthermore, the sample size for this study was relatively limited with only 67 students completing at least one diary entry as well as their CSR, which impacted the ability to detect differences within the dataset. Specifically, several variables had to be modified due to a lack of variability within the dataset, and conceivably, such processes could have resulted in issues with being able to detect important differences. Problematically, the demographic variable for students who identified as African American, Latino/a, or multiracial had to be combined into one category. While necessary to perform the statistical analyses, such a collapsing of identity characteristics may mask important differences occurring within these diverse identities in how they experience the campus community and respond on self-reported surveys accordingly.

Finally, this study faced some likely limitations with a testing effect occurring with the students. Certainly, the process of interviewing and journaling affected the students, and this process likely had some effect upon their behavioral frequency patterns and would have likely dramatically impacted their reporting behavior on the CSR. To best address these concerns,

students completed the CSR first, and they then participated in the time-use diary portion of the study. However, one important item to note was the timeline had to be adjusted slightly for one participant to further encourage participation. One student was sent a fourth request to submit her CSR on April 22 after she had completed her diary entries because she had completed all of her diary entries, but had not completed her CSR, so they could be compared. These limitations, though, did not likely grievously impair the study's aim to explore how students express themselves through the CSR and offer one "source of possible models rather than a source of actual explanation" (Davis & Sumara, 2005, p. 314).

CHAPTER 4: RESULTS

Introduction

This study used a sequential explanatory mixed methods design to better understand how students' responses on self-reported surveys were influenced by socio-environmental factors. Extending the work of Bowman (2010), Brenner (2012), Garry and associates (2002), Porter (2011), and other scholars who studied response bias in surveys, this study specifically explored how students' differential response patterns may have been evidence of self-reported surveys offering substantively different information about the student experience, as opposed to simply offering evidence of response bias. Specifically, how might students' reporting behaviors be shaped not by how they literally spend their time, but rather by how they understand themselves, as a result of their relative cultural capital within the campus environment? To properly contextualize and understand this complex phenomenon, a theoretical model was proposed and employed, which combined Bronfenbrenner's (2005) human ecology model of development, Bourdieu and Passeron's (1990) theory of social reproduction in education, and Tourangeau and associates' (2000) four phase survey response process. The specific research questions for this study were the following:

- How do students' responses regarding average weekly hours spent preparing for class, engaging in co-curricular activities, working for pay on campus, working for pay off campus, volunteering for community service, relaxing/socializing, caring for dependents, and commuting to campus compare between time-use diaries and the CSR?
- 2. What are the differences in response patterns between the two instruments based upon student demographic characteristics?

- 3. How do students' responses on the CSR and time-use diaries relate to the NSSE Engagement Indicators?
- 4. Why, if at all, do these differential response patterns exist in this particular college environment?

In order to answer these research questions, baseline data of how students were spending their time had to be obtained. Brenner (2012), Gonyea (2005), and Porter (2011) all suggest time-use diaries, as an appropriate data collection method to be able to obtain more accurate information about how individuals' spend their time because it removes much of the cognitive complexity associated with self-reported surveys. Since the response timeframe is much smaller (i.e., generally less than 24 hours), individuals do not have to undergo the same memory retrieval process, and since the instrument does not provide specific response options, issues with norm-referencing, which often arise in self-reported surveys, are mitigated (Belli et al., 2009). Consequently, as discussed in chapter three, students in this study were asked to complete five time-use diary entries to obtain baseline data, which could be used to understand the accuracy of student responses on self-reported surveys.

Before this comparison could be conducted, though, the diary entries had to be coded to match the corresponding activities identified on the CSR concerning how students estimate spending their time in a typical seven-day week. Specifically, the activities in question on the CSR were how many hours students spent in a typical seven-day week preparing for class, engaging in co-curricular activities, working for pay on and off campus, volunteering for community service, relaxing and socializing, caring for dependents, and commuting to campus. On the CSR, students indicated whether they engaged in these activities for zero (0) hours, one to five (1-5) hours, six to ten (6-10) hours, eleven to fifteen (11-15) hours, sixteen to twenty (16-20) hours, 21 to 25 hours, 26 to 30 hours, or more than 30 hours.

As a result, before a comparison of the response options could be completed, the data had to be cleaned, and the diary entries had to be combined to obtain a total score representative of the number of hours the students' spent engaged in the various activities during a typical sevenday week. Then, the total scores from the diaries, which were continuous level data, had to be converted into discrete ordinal level data to match the information, as it was provided on the CSR. For each variable of interest, Table 7 provides detailed information about the mean time spent engaged in various activities on a daily and weekly basis according to the diaries before being converted to discrete ranges, the median time in a typical seven-day week according to the CSR, and the median time in a typical seven-day week according to the converted diary entries. As shown in Table 7, the students on average spent 30.1 hours a week preparing for class, 11.4 hours engaging in co-curricular activities, and 28.0 hours relaxing and socializing according to their diary entries. The students spent less than five hours a week on average engaged in the remainder of the activities of interest. In order to compare these to the CSR, they had to be converted from continuous level data to discrete level data. Once this was completed, the median scores exhibited slight differences, but still aligned closely with the reported means for the diaries, and the medians from the diaries differed quite a bit from those reported on the CSR. As previously discussed, since no student in the dataset indicated any activities reasonably related to the variable asking them how many hours they spend in a typical seven-day week caring for dependents, this variable was dropped from further consideration.

	Daily Mean from Diary Entries								Weekly			
			y					Weekly	Median			
	>	y	sda	ay		\sim		Mean	from			
	da	da	nes	sbs:	ay	rda	lay	from	Converted	Weekly		
	lon	nes	/ed	hur	rida	atu	oun	Diary	Diary	Median		
Type of Activity	Z	Ē	М	E	Ц	Ñ	$\bar{\mathbf{N}}$	Entries	Entries	from CSR		
Preparing for Class	4.3	4.9	4.7	5.3	3.9	2.5	4.5	30.1	26 - 30	16 - 20		
Engaging in Co-Curricular Activities	1.5	1.5	1.4	1.3	1.8	2.1	1.8	11.4	6 - 10	6 - 10		
Working for Pay On Campus	0.2	0.6	0.1	0.3	0.2	0.3	0.1	1.8	0	0		
Working for Pay Off Campus	0.0	0.0	0.2	0.0	0.1	0.0	0.0	0.3	0	0		
Community Service	0.1	0.1	0.1	0.1	0.1	0.1	0.4	1.0	0	1 - 5		
Relaxing and Socializing	3.5	3.2	3.1	2.6	4.0	6.1	5.5	28.0	26 - 30	6 - 10		
Commuting to Campus	0.2	0.1	0.2	0.3	0.5	0.7	0.4	2.4	1 - 5	0		

Table 7.	Average Time S	Spent Engaged in	Various Activities Accord	ing to Different Data	a Collection Methods	(Reported in Hours)
						(

Source: Analysis of Data Collected from CSR with Permission from NSSE

Furthermore, the detailed demographic information for the students who completed at least one diary entry is represented in Table 6, which is available in Chapter Three. Of those students who participated in the second phase of data collection, thus enabling them to be included in the analyses to answer the research questions, 25.4% of respondents indicated regretting their college choice; 18.5% were first-generation college students; 35.4% identified as Asian, 13.8% identified as Black or African-American, 10.8% identified as Hispanic or Latino/a, 12.3% identified as Multiracial, and 27.7% identified as White; 46.2% indicated their grades were an A- or better on average; and 81.5% identified as a woman.

For this study, students who identified as being a member of an historically marginalized racial or ethnic group were oversampled to ensure adequate representation would be present in the dataset to utilize such demographic information, as predictor variables in the models. However, the sample of respondents was more disproportionately skewed toward students who identified as women and students who identified as Asian than would have been expected. Consequently, I would caution drawing any universally applied or context-free inferences from the findings in this study. Accordingly, the mixed methods research paradigm rejects notions of universality in favor of transferability or nuanced considerations of how findings from a study may be applied to alternate settings, and this study does provide intriguing findings, which may assist practitioners and researchers to better understand how to interpret and utilize information obtained from self-reported surveys (Morgan, 2008).

Research Question One: Comparing Answers from the Diary to the CSR

Before the relationship between students' relative cultural capital and their reporting behavior could be explored, identifying whether students did in fact inaccurately report on the CSR was essential. If the students accurately reported on the CSR, which would strongly support the construct validity of the instrument, the remaining research questions would largely be moot. In such an instance, the CSR would be found to have strong construct validity, so any differences in the dataset associated with demographic differences would reasonably be related to actual student behavioral patterns, not reporting behaviors. Consequently, variables found to have strong construct validity in research question one will not be given further consideration in subsequent research questions.

However, as shown in Table 7, the students did inaccurately report on the CSR in general. They reported far fewer hours on the CSR than the hours they estimated they typically spent in a seven-day week preparing for class and relaxing/socializing. On the CSR, the students reported spending between 16 to 20 hours each week preparing for class, but the diary entries indicated the students actually spent between 26 to 30 hours each week preparing for class. Likewise, the students reported spending between 6 to 10 hours each week relaxing and socializing, while the diary entries showed them spending between 26 to 30 hours each week relaxing and socializing, while the diary entries showed them spending between 26 to 30 hours each week and socializing and socializing the relationship between the time-use diary seven-day totals and the students' estimates of their behavioral patterns from the CSR.

Activity & Reporting Method	Median Hours Per Week	Negative Ranks	Positive Ranks	Ties	Z-Score
Preparing for Class (n=67)		5	49	13	-5.765***
Information from CSR	16-20				
Information from Diary Entries	26-30				
Engaged in Co-Curricular Activities (n=67)		11	37	19	-3.926***
Information from CSR	6-10				
Information from Diary Entries	6-10				
Working for Pay on Campus (n=66)		10	6	50	949
Information from CSR	0				
Information from Diary Entries	0				
Working for Pay Off Campus (n=66)		4	1	61	-1.236
Information from CSR	0				
Information from Diary Entries	0				
Community Service (n=66)		18	8	40	-2.043*
Information from CSR	1-5				
Information from Diary Entries	0				
Relaxing and Socializing (n=67)		6	52	9	-6.074***
Information from CSR	6-10				
Information from Diary Entries	26-30				
Commuting to Campus $(n=67)$		7	34	26	-3.417**
Information from CSR	0				
Information from Diary Entries	1-5				

Table 8. Descriptive Statistics and Results of Wilcoxon Sign Rank Test for Hours Spent in a Typical 7-Day Week Engaged in a Variety of Activities

Source: Analysis of Data Collected from CSR with Permission from NSSE * Significant at α =.05 ** Significant at α =.01 ***Significant at α <.001

Table 8 shows the results of the Wilcoxon Sign Rank Test, which provides the basis for determining how accurately the students' reported on the CSR. The Wilcoxon Sign Rank Test is used to compare matched data (i.e., each student in this study has two data points for each variable of interest) that is non-parametric, which is appropriate since this was discrete ordinal level data (Pallant, 2013). The test converts each student's scores to ranks and compares those ranks to determine if the reporting behavior on the two instruments differs in a statistically significant way (Pallant, 2013). When analyzing the results shown in Table 8, what becomes readily apparent is students generally inaccurately reported on the CSR with five of the seven variables of interest showing a statistically significant difference between the students' estimates on the CSR and how they spent their time according to the diary entries. Based upon the findings of this study, the null hypotheses were rejected for five of the seven variables of interest. The students statistically significantly inaccurately reported the number of hours they spent preparing for class (Z=-5.765; p<.001), engaging in co-curricular activities (Z=-3.926; p<.001), volunteering for community service (Z=-2.043; p=.041), commuting (Z=-3.417; p=.001), and relaxing and socializing (Z=-6.074; p<.001).

According to the results, though, the null hypotheses were retained for reporting behavior on working for pay on and off campus, as students accurately reported hours worked on campus (Z=-.949; p=.343) and off campus (Z=-1.236; p=.216). Such findings are logical for two primary reasons. First, very few students in this dataset worked for pay on or off campus, as evidenced by the weekly diary means before being converted to discrete ordinal level data of 1.8 hours per week working on campus and 0.3 working off campus. A lack of variability reduces the model's ability to detect a statistically significant difference in the relationship between the two variables since the effect size is reduced as well. Furthermore, issues with recall are likely to be mitigated with the time students' spend working for pay because the types of hourly positions students routinely hold require them to work a set, specific schedule and to closely track their hours, so they know how much they should be paid. Consequently, time spent working is less ambiguous than the other activities in question where students are not required to carefully monitor their time, nor work a set, regimented schedule, which makes the more tangible hours spent working for pay easier to recall and track for the students than the more temporarily amorphous activities like preparing for class.

While the students did accurately report hours spent working for pay, they still under reported for all of the variables of interest, and as evidenced by the relative effect sizes shown for these differences, they did so for many of the statistically significant variables in rather dramatic ways. In the context of this study, a larger effect size simply means the students more drastically under reported how many hours they spent engaged in various activities. The relative differences between the median hours reported on the two instruments for time spent relaxing and socializing (CSR Median = 6-10 hours; Diary Median = 26-30 hours) and volunteering in community service (CSR Median = 1-5 hours; Diary Median = 0 hours) underscores this relationship, as the much larger difference between the medians for time spent relaxing and socializing corresponds to the much higher effect size (r=.525), as compared to volunteering (r=.178). Using Cohen's (1988) criteria, the effect size for misreporting behavior on relaxing and socializing (r=.525) was large; misreporting behavior on preparing for class (r=.498) and engaging in co-curricular activities (r=.339) were medium; and misreporting behavior on volunteering in community service (r=.178) and commuting (r=.295) were small.

Furthermore, the ties, negative ranks, and positive ranks along with the signs for the Zscores provide additional information about the nature of the relationship between the two instruments. Since the diary entry scores were the baseline score, they were used as the first point of comparison with the CSR score being used as the second point of comparison, so a positive rank means the students under reported on the CSR; a negative rank means the students over reported on the CSR; and a tie means they accurately reported on the CSR. As an example, students who reported on their CSR that they prepare for class between 21 to 25 hours during a typical seven-day week, but indicated participating in more than thirty hours a week of time spent preparing for class on their diaries would be classified as under reporters.

As shown in Table 8, more students under reported than over reported for all of the variables of interest except working for on and off campus and volunteering. However, all of the Z-scores are negative, which means that even for the variables were more students over reported (e.g., volunteering for community service) the students who under reported did so more excessively than their peers who over reported, so when all of the ranks were summed, they still resulted in a negative number. In aggregate, the students simply under reported far more than they over reported on the CSR.

Moreover, the students reported spending statistically significant less time preparing for class, engaging in co-curricular activities, volunteering for community service, relaxing/socializing, and commuting to campus than evidenced by the amount of time they actually spent engaged in these activities according to their diary entries. Such findings call into question the construct validity of these variables. Conversely, the construct validity of the variables related to hours reported working for pay on and off campus was supported since the metrics from the diary and the CSR were not statistically significantly different from each other. As a result of these findings, the variables related to working for pay will not be utilized for further investigation since any identified differences found in the remaining research questions

would theoretically be associated with actual student behavioral patterns, not reporting behaviors, which is outside the scope of this study.

Research Question Two: Systematic Reporting Behavior

Before the second research question could be answered, the results from the first research question had to be utilized to create the outcome variables for the analyses. The outcome variables were the students' reporting behaviors for each of the variables of interest as well as their reporting behaviors on the seven variables in aggregate. The individual ranks from the Wilcoxon Sign Rank Test from the first research question were used to identify each individual's reporting behavioral scores for the five remaining variables of interest and to create an aggregate reporting behavioral score. A comparison of the positive ranks in Table 8 and the students who under report time spent preparing for class, engaging in co-curricular activities, commuting, volunteering, and relaxing/socializing in Table 9 highlights this relationship, as they are the same number of cases. As an example, 49 positive ranks are cited in Table 8 for preparing for class, and 49 individuals are listed as under reporting on the CSR.

To create the aggregate reporting score, the students' ranks for all seven variables of interest were combined with -1 being under reported (i.e., positive rank in Table 8), 0 being accurately reported (i.e., tie in Table 8), and 1 being over reported (i.e., negative rank in Table 8). These seven ranks were combined to identify whether the student under, accurately, or over reported in aggregate for the CSR. As an example, if individuals under reported time spent preparing for class (-1), commuting (-1), relaxing/socializing (-1), and volunteering (-1); accurately reported co-curricular engagement (0), and over reported working for pay on campus (1) and off campus (1), they would have an aggregate score of -2, which means they would be classified as an under reporter in an aggregate.

As discussed in chapter three, once all of the outcome variables were created, how little the students over reported for most of the variables of interest became readily apparent. This relative lack of variability in reporting behavior when coupled with the desired number of predictor variables to be included in the model meant not enough cases for each bivariate relationship would be present to perform ordered logistic regression (Agresti, 2013). Consequently, accurately reporting and over reporting were combined into one level, and binary logistic regression was utilized to analyze the relationship. Table 9 provides a detailed overview of the percentage of cases who under reported and the percentage of cases who accurate/over reported after the levels were combined for each variable of interest.

 Table 9. Distribution of Reporting Behavior on CSR with Accurate and Over Report Collapsed

Type of Activity	Number of Cases	% of Total
Preparing for Class (n=67)		
Under Report	49	73.1
Accurate & Over Report	18	26.9
Engaged in Co-Curricular Activities (n=67)		
Under Report	37	55.2
Accurate & Over Report	30	44.8
Working for Pay On Campus (n=66)		
Under Report	6	9.1
Accurate & Over Report	60	90.9
Working for Pay Off Campus (n=66)		
Under Report	1	1.5
Accurate & Over Report	65	98.5
Community Service (n=66)		
Under Report	8	12.1
Accurate & Over Report	58	87.9
Relaxing & Socializing (n=67)		
Under Report	52	77.6
Accurate & Over Report	15	22.4
Commuting to Campus (n=67)		
Under Report	34	50.7
Accurate & Over Report	33	49.3
Cumulative Reporting Behavior (n=65)		
Under Report	51	78.5
Accurate & Over Report	14	21.5

Source: Includes Analysis of Data Collected from CSR with Permission from NSSE

Once the outcome variables were created, student demographic characteristics were used as predictor variables to discern if a statistically significant relationship existed between student characteristics and reporting behavior. For similar reasons as those necessitating the use of binary logistic regression instead of order logistic regression, categories within the predictor variables also had to be collapsed. Table 10 summarizes the univariate distributions of the predictor variables in the models after categories were combined to make the model more parsimonious and eliminate statistical noise in the model.

While it is inherently problematic to lump individuals according to their racial or ethnic identities, as the manner in which students experience college campuses may be quite different based upon their unique identities and individual dispositions, the statistical tools available for this analysis would simply not work without the categories being collapsed. Since logistic regression is related to a chi-square analysis, it requires a certain number of cases to be present in each bivariate relationship to conduct the analysis (Agresti, 2013). Furthermore, collapsing students who identify as African-American/Black, Latino/a, and Multiracial into one category is supported by multiple studies, which find that students who identify as African-American/Black, Latino/a, and Multiracial have disproportionately lower graduation rates and academic success, as measured by grades, than their peers who identify as Asian or White (Fletcher & Tienda, 2014; Kuh et al., 2006; Pascarella & Terenzini, 2005).

Characteristics	Number of Cases	% of Total
Gender Identity (n=66)		
Man	13	19.40
Woman	53	80.30
Racial or Ethnic Identity (n=65)		
Asian	23	35.40
African-American/Black, Latino, &		
Multiracial	24	36.90
White	18	27.70
How have most of your grades been? (n=65)		
A- or Higher	30	46.20
B+	17	26.20
B or Lower	18	27.70
Would you attend this institution if you could start		
over? (n=67)	17	25.40
Definitely No or Probably No	50	74.60
Probably Yes or Definitely Yes		
First-Generation College Student (n=65)		
Yes	12	18.50
No	53	81.50

Table 10. Predictor Variables for Binary Logistic Regression Model with Categories Collapsed

Source: Analysis of Data Collected from CSR with Permission from NSSE

Once the data had been prepared, a binary logistic regression model was employed to understand the relationship between students' demographic characteristics and their reporting behavior on self-reported surveys. As shown in Table 10, the predictor variables used in the models were related to the students' personally held identities (i.e., race/ethnicity, gender identity, and first-generation college student status), academic performance (i.e., self-reported grades), and satisfaction with the campus environment (i.e., likelihood to attend the same institution if they could restart). As shown in Table 9, the outcome variables were the two level response options of under reporting or accurately/over reporting on the CSR for the time the students estimated they spent preparing for class, engaging in co-curricular activities, volunteering, commuting, and relaxing/socializing as well as their aggregate reporting behavior. For each variable of interest, the model fit and predictive power will be discussed. Table 11 provides a summary of these statistics as well as the variance explained in the outcome variables by the model including the predictor variables. When comparing models in binary logistic regression, a control model with no predictor variables is utilized, as the basis for the comparison. The control model assumes 100% of cases will fall into whichever category for the outcome variable has the majority of the cases. Consequently, the relative lack of variability in this dataset makes it difficult for a model with the predictor variables included to perform better than one with no predictor variables. As an example, a model for reporting behavior on time spent preparing for class with no predictor variables correctly predicts 71.4% of cases while one with the predictor variables included correctly predicts 73% of cases. Since the students overwhelmingly under report (n=49), a model assuming all the individuals in the sample will under report (n=67) still performs rather well. Additionally, the individual relationship between each of the predictor variables and the outcome variables was assessed. Tables 12a, 12b, 12c, and 12d provide summary statistics regarding the statistical significance of each of the individual predictor variables for each of the models.

			Cl	Chi-Square			osmer a	nd	Model 1	
	% Predict	ed Correct	Goodn	ess of l	Fit Test	Lem	eshow	Test	Explained Variance	
Outcome Variables	Model 0	Model 1	χ^2	df	р	χ^2	df	р	Cox & Snell R ²	Nagelkerke R ²
Preparing for Class Engage in Co-	71.4	73.0	11.90	7	.104	5.53	8	.699	.172	.247
Curricular Activities	55.6	63.5	9.10	7	.246	10.08	7	.184	.135	.180
Community Service	87.3	85.7	7.72	7	.353	3.56	8	.895	.116	.218
Relaxing & Socializing	77.8	73.0	4.56	7	.714	5.86	8	.662	.070	.107
Commuting to Campus	52.4	61.9	8.46	7	.294	3.79	8	.875	.126	.168
Aggregate Response										
Behavior	77.8	79.4	14.30	7	.046*	7.01	8	.536	.203	.311

Table 11. Summary of Model Fit and Explained Variance Statistics for Binary Logistic Regression Models

Source: Includes Analysis of Data Collected from CSR with Permission from NSSE * Significant at α=.05 ** Significant at α=.01 ***Significant at α<.001

						Odds	95% (C.I. for
Predictor	В	S.E.	Wald	df	р	Ratio	Odds	Ratio
							Lower	Upper
Preparing for Class								
Gender Identity (Male=0)	557	.827	.453	1	.501	.573	.113	2.898
Racial or Ethnic Identity								
Asian	1.277	.877	2.119	1	.145	3.587	.643	20.023
Black, Latino/a, & Multiracial	-1.472	.925	2.536	1	.111	.229	.037	1.404
White (Referent)			7.055	2	.029*			
First Generation Status (Not=0)	-1.708	1.074	2.527	1	.112	.181	.022	1.489
Grades								
A- or Higher	998	.912	1.198	1	.274	.369		2.202
B+	373	.928	.161	1	.688	.689	.062	4.244
B or Lower (Referent)			1.335	2	.513		.112	
Satisfied with School Choice (No=0)	2.020	.960	4.423	1	.035*	7.537		49.514
Constant	-1.273	1.385	.845	1	.358	.280	1.147	
Engage in Co-Curricular Activities								
Gender Identity (Male=0)	1.191	.806	2.185	1	.139	3.292	.678	15.982
Racial or Ethnic Identity								
Asian	448	.753	.354	1	.552	.639	.146	2.796
Black, Latino/a, & Multiracial	398	.732	.290	1	.590	.674	.161	2.830
White (Referent)			.438	2	.803			
First Generation Status (Not=0)	.338	.834	.164	1	.685	1.402	.274	7.183

Table 12a. Predictors of Reporting Behavior by Variable of Interest

Source: Includes Analysis of Data Collected from CSR with Permission from NSSE

¹No first generation college students under-reported the number of hours spent engaged in community services. The reported odds ratio was over 500,000,000 as a result.

						Odds	95%	C.I. for
Predictor	В	S.E.	Wald	df	р	Ratio	Odds	s Ratio
							Lower	Upper
Engage in Co-Curricular Activities, Cont'd.								
Grades								
A- or Higher	426	.743	.329	1	.566	.653	.152	15.058
B+	1.132	.806	1.973	1	.160	3.103	.639	2.800
B or Lower (Referent)				2	.105			
Satisfied with School Choice (No=0)	789	.709	1.238	1	.266	.454	.113	1.824
Constant	471	1.252	.141	1	.707	.625		
Community Service								
Gender Identity (Male=0)	.421	1.286	.107	1	.744	1.523	.123	18.923
Racial or Ethnic Identity								
Asian	1.339	1.247	1.154	1	.283	3.817	.331	43.963
Black, Latino/a, & Multiracial	1.650	1.203	1.880	1	.170	5.206	.492	55.067
White (Referent)			2.387	2	.303			
First Generation Status (Not=0) ¹	20.044		.000	1	.999		.000	
Grades								
A- or Higher	1.589	1.100	2.088	1	.148	4.899	.568	42.294
B+	2.169	1.490	2.119	1	.145	8.754	.472	162.433
B or Lower (Referent)			2.658	2	.265			
Satisfied with School Choice (No=0)	.074	1.208	.004	1	.951	1.077	.101	11.502
Constant	872	2.085	.175	1	.676	.418		

Table 12b. Predictors of Reporting Behavior by Variable of Interest, Continued

Source: Includes Analysis of Data Collected from CSR with Permission from NSSE

¹No first generation college students under-reported the number of hours spent engaged in community services. The reported odds ratio was over 500,000,000 as a result.

						Odds	95% C.I. for	
Predictor	В	S.E.	Wald	df	р	Ratio	Odds Ratio	
							Lower	Upper
Relaxing & Socializing								
Gender Identity (Male=0)	.520	.895	.338	1	.561	1.682	.291	9.711
Racial or Ethnic Identity								
Asian	.533	.862	.382	1	.536	1.704	.314	9.239
Black, Latino/a, & Multiracial	244	.872	.078	1	.780	.783	.142	4.327
White (Referent)			.797	2	.671			
First Generation Status (Not=0)	.021	.922	.000	1	.982	1.021	.167	6.223
Grades								
A- or Higher	180	.932	.037	1	.847	.835	.134	5.189
B+	1.034	.886	1.362	1	.243	2.813	.495	15.982
B or Lower (Referent)			2.840	2	.242			
Satisfied with School Choice (No=0)	.546	.858	.404	1	.525	1.726	.321	9.282
Constant	-2.446	1.460	2.806	1	.094	.087		
Commuting to Campus								
Gender Identity (Male=0)	664	.747	.790	1	.374	.515	.119	2.225
Racial or Ethnic Identity								
Asian	.672	.723	.863	1	.353	1.958	.474	8.083
Black, Latino/a, & Multiracial	627	.738	.722	1	.395	.534	.126	2.269
White (Referent)			2.837	2	.242			
First Generation Status (Not=0)	-1.495	.821	3.316	1	.069	.224	.045	1.121

Table 12c. Predictors of Reporting Behavior by Variable of Interest, Continued

Source: Includes Analysis of Data Collected from CSR with Permission from NSSE

¹No first generation college students under-reported the number of hours spent engaged in community services. The reported odds ratio was over 500,000,000 as a result.

						Odds	95% C.I. for	
Predictor	В	S.E.	Wald	df	р	Ratio	Odds Ratio	
							Lower	Upper
Commuting to Campus, Cont'd.								
Grades								
A- or Higher	-1.333	.803	2.751	1	.097	.264	.055	1.274
B+	163	.802	.041	1	.839	.849	.176	4.091
B or Lower (Referent)			3.640	2	.162			
Satisfied with School Choice (No=0)	469	.695	.454	1	.500	.626	.160	2.446
Constant	1.934	1.272	2.311	1	.128	6.914		
Aggregate Response Behavior								
Gender Identity (Male=0)	067	.857	.006	1	.938	.935	.174	5.016
Racial or Ethnic Identity								
Asian	.587	.830	.500	1	.479	1.798	.354	9.139
Black, Latino/a, & Multiracial	-1.787	1.245	2.062	1	.151	.167	.015	1.920
White (Referent)			3.783	2	.151			
First Generation Status (Not=0)	.826	1.013	.664	1	.415	2.283	.314	16.622
Grades								
A- or Higher	.690	1.114	.384	1	.536	1.994	.224	17.719
B+	2.062	1.160	3.159	1	.075	7.865	.809	76.438
B or Lower (Referent)			4.013	2	.134			
Satisfied with School Choice (No=0)	821	.830	.977	1	.323	.440	.086	2.240
Constant	-1.670	1.447	1.331	1	.249	.188		

Table 12d. Predictors of Reporting Behavior by Variable of Interest, Continued

Source: Includes Analysis of Data Collected from CSR with Permission from NSSE

¹No first generation college students under-reported the number of hours spent engaged in community services. The reported odds ratio was over 500,000,000 as a result.
Response Behavior for Time Spent Preparing for Class

For the first variable of interest regarding predicting reporting behavior for time spent preparing for class, the full model was not statistically significant, χ^2 (df=7, n=63) = 11.896, p=.104, which means the model with all five predictor variables included was not able to distinguish reporting behavior for time spent preparing for class better than the control model, which simply used the distribution of the outcome variables to predict every student would under report. Contradictorily, the Hosmer and Lemeshow Chi-square Goodness of Fit test for the model was not statistically significant, γ^2 (df=8, n=63) = 5.534 p=.699) indicating the model fits our data well. Furthermore, the model explains between 17.2 and 24.7 percent (Cox & Snell Rsquare = .172; Nagelkerke R Square = .247) of the variability in reporting behavior on class preparation, and the model correctly predicted 73.0% of cases reporting behavior. Only two of the variables were statistically significant predictors of the likelihood of reporting behavior for time spent preparing for class (satisfaction with school choice and identifying as White). After controlling for other factors in the model, students who indicated they were satisfied with their school choice were over seven times more likely to accurately or over report their time spent preparing for class (odds ratio = 7.537) than those who were unsatisfied. See Table 12 for complete statistics.

Although, identifying as a race other than White is not statistically significant, the findings still suggest some interesting conclusions. Students who identified as Asian were 258% more likely to accurately or over report time spent preparing for class compared to their peers who identified as White. Furthermore, students who identified as African American, Black, Latino/a, or Multiracial (AABLM) were 77.1% more likely than their peers who identified as White to under-report their time spent preparing for class. Finally, a model made more

parsimonious by eliminating the two predictor variables with the least amount of statistical significance (gender identity and grades) was statistically significantly better than the control made at being able to distinguish reporting behavior for time spent preparing for class, χ^2 (df=4, n=63) = 10.318, p=.035. Consequently, first-generation college student status, satisfaction with the campus environment, and racial/ethnic identity all appear to be important factors influencing reporting behavior on time spent preparing for class for these students.

Response Behavior for Time Spent Engaged in Co-Curricular Activities

For the second variable of interest predicting reporting behavior for time spent engaged in co-curricular activities, the full model was not statistically significant, χ^2 (df=7, n=63) = 9.101, p=.246, which means the model with all five predictor variables included was not able to distinguish reporting behavior for time spent engaged in co-curricular activities better than the control model with no predictor variables. However, once again, the Hosmer and Lemeshow Chi-square Goodness of Fit test for the model was not statistically significant, χ^2 (df=7, n=63) = 10.081 p=.184) indicating the model fits our data well and has some predictive power. Furthermore, the model explains between 13.5 and 18 percent (Cox & Snell R-square = .135; Nagelkerke R Square = .18) of the variability in reporting behavior on time spent engaged in cocurricular activities, and the model correctly predicted 63.5% of cases reporting behavior. As shown in Table 12, none of the variables was statistically significant predictors of reporting behavior for time spent engaged in co-curricular activities, but gender identity (p=.139) and having a B- or lower (p=.105) were the strongest predictors in the model when controlling for other variables. Students with B+ as their typical grade were over three times as likely to accurately or over-report time spent engaged in co-curricular activities, as compared to their peers who reported that most of their grades were B- or lower.

Response Behavior for Time Spent Engaged in Community Service

For the variable of interest predicting reporting behavior for time spent engaged in community service, the full model was not statistically significant, χ^2 (df=7, n=63) = 7.772, p=.353, which means the model with all five predictor variables included was not able to distinguish reporting behavior for time spent engaged in community service better than the control model with no predictor variables. However, the Hosmer and Lemeshow Chi-square Goodness of Fit test for the model was not statistically significant, χ^2 (df=8, n=63) = 3.559 p=.895) indicating the model fits our data well and has some predictive power. Furthermore, the model explains between 11.6 and 21.8 percent (Cox & Snell R-square = .116; Nagelkerke R Square = .218) of the variability in reporting behavior on time spent engaged in community service, and the model correctly predicted 85.7% of cases reporting behavior. As shown in Table 12, none of the variables was statistically significant predictors of reporting behavior on time spent engaged in community service.

Response Behavior for Time Spent Commuting to Campus

The full model was once again not statistically significant, χ^2 (df=7, n=63) = 8.460, p=.294, which means the model with all five predictor variables included was not able to distinguish reporting behavior for time spent commuting to campus better than the control model with no predictor variables. However, the Hosmer and Lemeshow Chi-square Goodness of Fit test for the model was not statistically significant, χ^2 (df=8, n=63) = 3.762 p=.875) indicating the model does fit the data well. Furthermore, the model explains between 12.6 and 16.8 percent (Cox & Snell R-square = .126; Nagelkerke R Square = .168) of the variability in reporting behavior on time spent commuting to campus, and the model correctly predicted 61.9% of cases reporting behavior for time spent commuting. As shown in Table 12, none of the variables was statistically significant predictors of reporting behavior on time spent engaged in community service.

Based upon this particular student population, these findings seem highly logical since the vast majority of first-year students (i.e., nearly 100%) live on campus. Consequently, very little variability exists within the dataset with the median reporting time for commuting to campus being zero (0) according to the diaries and 1-5 hours a week from the diary entries. The most commonly cited type of commuting behavior in the diaries was commuting to and from campus after attending social gatherings off-campus. Largely, this population of students simply does not have to commute to and from campus as part of their daily lives.

Aggregate Response Behavior

For the final outcome variable measuring students aggregate reporting behavior on the CSR, the full model was statistically significant, χ^2 (df=7, n=63) = 14.304, p=.046), which means the model with all five predictor variables included was able to distinguish aggregate reporting behavior better than the control model with no predictor variables. Further supporting the fit of the model, the Hosmer and Lemeshow Chi-square Goodness of Fit test for the model was not statistically significant, χ^2 (df=8, n=63) = 7.009 p=.536). Furthermore, the model explained between 20.3 and 31.1 percent (Cox & Snell R-square = .203; Nagelkerke R Square = .311) of the variability in aggregate reporting behavior, and the model correctly predicted 79.4% of cases aggregate reporting behavior. However as shown in Table 12, none of the variables was statistically significant predictors of aggregate reporting behavior.

Research Question Three: Comparison to NSSE Engagement Indicators

To answer the third research question, hierarchical linear regression was utilized to compare the relationship between the NSSE Engagement Indicators and the amount of time

students reported spending in a typical seven-day week preparing for class, engaging in cocurricular activities, and participating in community service, as measured through time-use diary entries and the CSR. As discussed in Chapter Three, the Engagement Indicators were created using the syntax made available by NSSE (2016), which resulted in continuous level data, to be used as the outcome variables. Additionally, due to limitations in the number of predictor variables, which could be included in the model, only three of the variables of interest could be included from the diary entries and the CSR, so the model would not have more than six total predictor variables. As a result, only those input variables, which should theoretically have a relationship with the NSSE Engagement Indicators were included in the analyses, which are time spent preparing for class, engaging in co-curricular activities, and volunteering.

Furthermore, a forced block entry method was utilized to understand how much of the unique variance the CSR metrics contributed to the explained variance in the NSSE Engagement Indicators. The first force block entry of predictor variables were the ones measured by the timeuse diaries with the second force block entry of predictor variables being the ones reported by the students on the CSR. Similarly to how the diary and CSR input variables were ordered for the Wilcoxon Sign Rank Test in the first research question, the diary entry variables were ordered first because they provided the baseline information for what students actually do. Theoretically, if the CSR variables have strong construct validity with the diary variables as well as strong predictive validity for the NSSE Engagement Indicators, they will not be statistically significant predictors because they would add little unique explained variance due to high levels of multicollinearity. Conversely, if the CSR has poor construct validity, but strong predictive validity, they will be statistically significant predictors of the NSSE Engagement Indicators. However, when testing the model to discern if the assumptions of hierarchical linear modeling were violated, no issues with multicollinearity were exhibited between the variables of interest, as measured through the diaries and the CSR. None of the VIFs violated the recommended limit of 10 or .1 for tolerance (Pallant, 2013). The VIFs for the models with all six predictor variables included were the following: preparing for class as measured by diary (VIF = 1.323), engaging in co-curricular activities as measured by diary (VIF = 1.241), volunteering as measured by diary (VIF = 1.312), preparing for class as measured by CSR (VIF = 1.351), engaging in co-curricular activities as measured by CSR (VIF = 1.307), volunteering as measured by CSR (VIF = 1.350). Finally, they may simply have poor construct and predictive validity. If this is the case, neither the diary, nor the CSR time-use metrics would be statistically significant. Table 13 provides comprehensive model fit summary statistics for each NSSE Engagement Indicator.

The only statistically significant model was the one predicting the students' quantitative reasoning NSSE Engagement Indicator. This was significant for both the model only utilizing the information available from the diary entries (F = 4.225, df = 3, p = .009), and it was also statistically significant for the model using information from the diary entries as well as the CSR (F = 2.438, df = 6, p = .036). However, the F-change statistic was not statistically significant for the second force block entry of predictor variables (ΔF = .710, df = 3, p = .550), which indicates the amount of unique variance in the quantitative reasoning score of the students accounted for by the information from the CSR after controlling for the information made available from the diaries was not a significant predictor. Furthermore, none of the other model fit statistics for any of the other NSSE Engagement Indicators were statistically significant. The only other model, which had a p-value of less than .2, was Discussion with Diverse Others. The findings suggest hours spent preparing for class, engaging in co-curricular activities, and volunteering for

community service whether measured by diary entries or self-reported methods are not strong predictors of the NSSE Engagement Indicators with the exception of quantitative reasoning.

Additionally, none of the regression coefficients for the predictor variables were statistically significant with one exception and neither were any of the R-square change values for the blocks of variable. Tables 14a and 14b provide an overview of the regression coefficients and R-square change values. When utilized in the second model containing all six predictor variables, community service, as measured through the diary entries, was statistically significant predictor of Discussion with Diverse Others ($\beta = 6.194$, p = .047). However, for all other regression coefficients, the null hypothesis would be retained, as none of the predictor variables are statistically significant predictors of the NSSE Engagement Indicators. Since any shared variance amongst the variables is given to the first block entry in hierarchical linear modeling, all of the models were retested using just information from the CSR (e.g., only three total predictor variables) to see if that changed any model fit summary statistics or regression coefficients. All R-square statistics for all the models were still not statistically significant. The only change was with preparing for class, as measured by the CSR, was a statistically significant predictor for the NSSE Engagement Indicator for Quantitative Reasoning (β 2.666, p = .021). Cumulatively, these findings suggest the time metrics, as reported on the CSR, have poor construct and predictive validity for the NSSE Engagement Indicators. The lone exception would appear to be time spent preparing for class and Quantitative Reasoning.

EXPLORING SELF-REPORTED DATA

	Model with only			Model w	ith Diar	y & CSR	Model			
	Diary	Diary Predictors			Predictors			Change Statistics		
NSSE Engagement Indicators	F	df	р	F	df	р	ΔF	df	р	
Higher-Order Learning	.095	3	.962	.355	6	.904	.616	3	.607	
Reflective & Integrative Learning	.318	3	.812	.271	6	.949	.235	3	.872	
Quantitative Reasoning	4.225	3	.009**	2.438	6	.036*	.710	3	.550	
Learning Strategies	1.315	3	.277	.673	6	.672	.089	3	.966	
Collaborative Learning	1.382	3	.257	.882	6	.514	.420	3	.739	
Discussion with Diverse Others	1.681	3	.180	1.403	6	.229	1.116	3	.350	
Student-Faculty Interaction	.435	3	.728	.479	6	.821	.532	3	.662	
Supportive Environment	.212	3	.887	.111	6	.995	.019	3	.996	
Effective Teaching Practice	1.072	3	.368	.720	6	.635	.399	3	.754	
Quality of Interactions	.240	3	.868	.438	6	.851	.640	3	.593	

Table 13. Model Fit Summary Statistics Comparing Model Using Only Diary Entry Time-Use Metrics with a Model Using Time-Use Diary Metrics and CSR Time-Use Metrics

* Significant at α=.05 ** Significant at α=.01 ***Significant at α<.001

EXPLORING SELF-REPORTED DATA

	NSSE Engagement Indicators									
			Reflect	ive and						
	Highe	er-Order	Integ	rative	Quan	titative	Lear	ning	Collab	orative
	Learning		Lear	Learning		soning	Strat	egies	Learning	
Predictor	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β
Model 1	.005		.015		.170		.060		.063	
Diary Class Preparation		229		.517		3.806		2.116		1.465
Diary Co-Curricular		.304		586		-1.431		386		269
Diary Community Service		-1.163		1.175		-1.584		941		4.908
Model 2	.030		.012		.029		.004		.082	
Diary Class Preparation		496		.220		3.065		2.096		1.050
Diary Co-Curricular		.214		840		-1.817		180		176
Diary Community Service		.859		.817		-2.167		553		4.222
CSR Class Preparation		.360		.601		1.454		010		.810
CSR Co-Curricular		.711		.625		.619		769		-1.067
CSR Community Service		-3.986		.938		2.105		436		2.501

Table 14a. Comparison of Models Predicting NSSE Engagement Indicators Using Information from Diaries and CSR Self-Reports

Source: Includes Analysis of Data Collected from CSR with Permission from NSSE * Significant at α =.05 ** Significant at α =.01 ***Significant at α <.001

		NSSE Engagement Indicators									
							Effe	ctive			
	Discus	sion with	Student	-Faculty	Supp	ortive	Teac	ching	Qual	ity of	
	Divers	Diverse Others		Interaction		Environment		Practices		ctions	
Predictor	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	ΔR^2	β	
Model 1	.075		.021		.011		.049		.011		
Diary Class Preparation		1.752		.117		.594		1.602		280	
Diary Co-Curricular		1.244		.716		275		383		452	
Diary Community Service		3.760		2.249		1.631		.881		.724	
Model 2	.050		.026		.001		.019		.031		
Diary Class Preparation		1.306		.059		.669		1.946		745	
Diary Co-Curricular		1.630		.621		321		133		347	
Diary Community Service		6.194*		3.849		1.279		1.409		.599	
CSR Class Preparation		.617		.004		110		699		.859	
CSR Co-Curricular		-1.365		.833		.166		504		997	
CSR Community Service		-3.670		-3.509		.527		-1.410		1.409	

Table 14b. Comparison of Models Predicting NSSE Engagement Indicators Using Information from Diaries and CSR Self-Reports, Continued

Source: Includes Analysis of Data Collected from CSR with Permission from NSSE

* Significant at α =.05 ** Significant at α =.01

***Significant at α<.001

Research Question Four: Qualitative Findings and Mixing the Data

Answering the fourth research question required the qualitative analyses of twenty-seven (27) individual interviews and a mixing of the quantitative and qualitative data to understand how students differentially experienced campus, as a result of their relative cultural capital, and in turn, why these experiences may have influenced their responses on self-reported surveys. Tables 15a and 15b provide a comprehensive overview of the demographic information and reporting behaviors for all of the students who participated in this phase of data collection. This information was utilized to specifically understand why the students statistically significantly under reported for all of the variables of interest, except for working for pay on and off-campus (i.e., the information from research question one), and why some of the predictor variables for this reporting behavior were statistically significant while others were not (i.e., the information two)?

To consider these questions, the individual interviews were comparatively analyzed to discern the differences between those students who systematically under reported, as compared to their peers who systematically accurately/over reported. While reporting behavior for each of the variables of interest (e.g., preparing for class, volunteering, etc.) were considered, the comparison groups were primarily comprised of those students who under reported on the CSR in aggregate and those who accurately/over reported on the CSR in aggregate. As a reminder, the category levels for accurately and over reporting were combined into one group for each variable of interest due to the relative lack of variability within the dataset, so any references to accurately/over reporting refer to the students' reporting behaviors on the CSR. The use of qualitative data to explain quantitative findings is consistent with a sequential explanatory mixed methods design.

EXPLORING SELF-REPORTED DATA

	<u>-</u>	<u>T ··· J·</u>		1	<u> </u>		Re	porting	, Behavio	r^4	
Pseudonym	Racial or Ethnic Identity ¹	Gender Identity ²	FGCS ³	Average Grades	Satisfaction with School Choice ³	Class Prep	Co-curricular	Volunteering	Relaxing / Socializing	Commuting	Aggregate ⁵
Alyssa	AA/B	F	Y	B or Less	Ν	-	-	+	-	-	-
April	W	F	Ν	A- or Up	Y	-	+	+	-	-	-
Ashley	А	F	Ν	A- or Up	Y	+	-	+	+	-	-
Bianca	AA/B	F	Ν	B or Less	Y	-	+	+	+	-	-
Brian	А	Μ	Ν	A- or Up	Ν	-	-	+	-	+	-
Brittany	А	F	Ν	A- or Up	Y	+	-	+	+	-	-
Cassandra	W	F	Ν	B+	Y	-	+	+	-	+	-
Catherine	W	F	Ν	A- or Up	Y	-	-	+	+	-	-
Crystal	А	F	Ν	A- or Up	Y	-	-	+	-	-	-
Eleanor	Μ	F	Ν	A- or Up	Y	-	+	+	-	-	-
Emily	W	F	Ν	A- or Up	Y	-	-	+	-	-	-
Erica	W	F	Ν	A- or Up	Y	-	-	-	-	+	-
Gabrielle	H/L	F	Ν	B+	Y	-	+	+	-	+	-

Table 15a. Overview of Demographic Information and Reporting Benavior for Qualitative Data San	ormation and Reporting Behavior for Qualitative Data S	sample
--	--	--------

Source: Includes Analysis of Data Collected from CSR with Permission from NSSE

¹ A: Asian; AA/B: African-American/Black; H/L: Hispanic/Latino/a; M: Multiracial; W: White

² F: Female: M: Male

³ N: No; Y: Yes

⁴ Under Report: - ; Accurate/Over Report: +

⁵ The aggregate reporting behavior can still be under reporting even if the individual accurately/over reports on more of the variables of interest since the aggregate score was created before the category levels of accurate and over report were collapsed.

EXPLORING SELF-REPORTED DATA

					<u></u>		Re	porting	; Behavio	or ⁴	
Pseudonym	Racial or Ethnic Identity ¹	Gender Identity ²	FGCS ³	Average Grades	Satisfaction with School Choice ³	Class Prep	Co-curricular	Volunteering	Relaxing / Socializing	Commuting	Aggregate ⁵
Jacob	AA/B	М	Y	B+	Y	-	-	+	+	+	-
Jasmine	А	F	Y	B+	Y	+	+	+	-	-	+
Jessica	А	F	Y	B+	Ν	-	+	+	+	-	+
John	А	М	Y	A- or Up	Y	-	-	+	-	+	+
Kayla	W	F	Ν	A- or Up	Ν	-	+	+	-	+	-
Maria	H/L	F	Y	B or Less	Y	-	-	+	-	+	-
Mary	А	F	Ν	A- or Up	Ν	-	+	+	-	+	+
Melissa	W	F	Ν	B+	Y	-	+	+	+	+	-
Michael	W	М	Ν	B+	Y	+	+	-	+	+	+
Rachel	А	F	Ν	A- or Up	Ν	+	-	+	+	+	+
Samantha	W	F	Ν	A- or Up	Y	+	-	+	-	+	+
Taylor	А	F	Y	B+	Y	+	+	+	-	-	-
Vanessa	А	F	Ν	\mathbf{B}^+	Ν	-	+	+	+	+	+
Veronica	H/L	F		B+	Y	-	-	+	+	-	-

	Table 15b. Ove	rview of Demogra	phic Information	and Reporting	Behavior for (Qualitative Data S	ample, Continued
--	----------------	------------------	------------------	---------------	----------------	--------------------	------------------

Source: Includes Analysis of Data Collected from CSR with Permission from NSSE ¹ A: Asian; AA/B: African-American/Black; H/L: Hispanic/Latino/a; M: Multiracial; W: White

² F: Female: M: Male

³ N: No; Y: Yes

⁴ Under Report: - ; Accurate/Over Report: +

⁵ The aggregate reporting behavior can still be under reporting even if the individual accurately/over reports on more of the variables of interest since the aggregate score was created before the category levels of accurate and over report were collapsed

144

Formulating a Response on the CSR

As part of the individual interviews, cognitive interviewing was conducted to understand how students understood and interpreted the CSR. Students had relatively consistent interpretations of many of the questions on the CSR, but students who under reported were far more likely to provide a qualifier voicing doubt or more narrowly defining a category than their peers. The clarity with which Vanessa, a systematic accurate/over reporter, responded when asked what activities would be included in the category for preparing for class typified how the students who accurately/over reported responded. "A lot of reading....I have a lot of reading for other classes, but I don't always do them. Writing – I'm in the first year writing seminar," responded Vanessa when asked what she considered part of preparing for class. Michael, another systematic accurate/over reporter who also accurately reported the time he spent preparing for class, discussed his academic activities with the same level of clarity and no equivocation.

Yeah, so, although I do end up studying a lot in my own room, when I am with friends, it usually ends up being like an hour of work, ten minutes of break. Or we'll like go with a two hours of work, thirty minutes break mentality. (Michael)

Likewise, John discussed how he was able to calculate how many hours he spent preparing for class with a very thorough explanation.

In an average sense, typically, they give you however many weeks to do a writing assignment, paper, or something like that. I'll do nearly all of it in the last week, so if you space it out evenly, on average, it wouldn't really be that much time. (John)

John's thought process specifically addresses issues, which may arise in the memory retrieval phase of the survey response process where temporality affects memory because individuals have a tendency to assume events occurring more recently happen with more prevalence than they actually do. John's mentality and that of many of the systematic accurate/over reporters specifically combat this, as he intentionally "averages" the total time a project took to complete over the duration of the intervening weeks. He does not assume because he spent twenty hours writing a paper one week that he spends twenty hours writing a paper every week. In totality, the students who accurately/over reported have a greater sense of clarity and specificity when discussing the types of activities they included in the various categories than their peers who under reported.

Conversely, students who under reported were more likely to express doubt or uncertainty about how many hours they spent engaged in various activities or more narrowly define the categories. Erica's response typified the manner in which students who under reported in aggregate discussed what activities to include in the category for preparing for class: "I guess just like doing my homework, reviewing over stuff that I learned, studying for tests, stuff like that." Students who under reported were more likely than their peers who accurately/over reported to qualify their responses with "it was hard" (Cassandra), "I think" (Catherine), and "I guess" (April). Additionally, they were likely to be engaged in activities simultaneously while preparing for class like Gabrielle who did homework while "socializing" or "watching Netflix." The students who under reported were simply less assured of their responses than their peers who accurately/over reported.

Further complicating the response process for students who systematically under reported was their relatively limited, narrowly tailored definitions of the various categories. As an example, Alyssa, Cassandra, and others reported rather constricted views of what types of activities would be considered part of preparing for class. When asked if she would count group work within the category for preparing for class, an event commonly cited by many students as fitting into this category, Alyssa, a student who systematically under reported, said, "Not really because I know that I'm not focused as much....We get off topic." Cassandra, another student who systematically under reported, had an even narrower definition of preparing for class in which she qualified "studying...[as] preparing for an exam or preparing for getting a good grade or something."

The students who under reported were also far more likely to indicate confusion or doubt about whether activities should be classified as volunteering, co-curricular engagement, or relaxing and socializing. Erica's response in regard to the activities associated with engaging in co-curricular activities highlighted the confluence of factors, which resulted in students being unclear about how to categorize an activity.

Yeah, I don't know. For me, I don't see it as like a task I have to do. I kind of really enjoy doing it. I guess, in a way, it's volunteering because I'm working there without getting paid, but I kind of see it as something that I really enjoy, so I guess, as more of one my co-curricular activities. (Erica)

For Eric and many students, volunteering for community service was not supposed to be associated with pleasure, but instead was supposed to involve some level of compulsion or drudgery. If an activity was enjoyed and less tightly structured/organized, then the students generally did not know how to categorize it.

Consequently, students in both groups were clear about only including highly structured, organized activities such as student clubs and organizations in the co-curricular engagement category. Activities like exercising in the on-campus recreation center, attending campus concerts, or attending residence hall events did not count for the students, as co-curricular activities. As Kayla who identified as White and under reported indicated when asked how she

considered her time exercising in the on-campus recreation facilities, "I guess I just consider that something to do in my free time."

The only time the students would count such activities as co-curricular engagement is if they occurred in highly structured environments. If the students counted using the on-campus recreation center at all, they counted it like Veronica did, as a form of relaxing/socializing. Other activities, which the students in both populations, would generally not count as co-curricular involvement were residence hall activities, mandatory floor meetings, or mandatory meetings to prepare for service trips. In regard to service trips or weekend, reflective retreats, these activities were also not captured because the students did not view them, as part of a typical seven-day week. None of the students was engaged in any of these types of activities during the diary collection periods, either, so the students not reporting these types of activities actually better aligned with the time-use diary data. But, noteworthy is the universal acceptance of "typical" excluding many community service opportunities for students because, as Taylor described them, "They're just once. They're not usual."

Finally, the students in both groups did not agree upon something, which may seem relatively straightforward to administrators or survey designers. What is considered 'on campus?' AVU has multiple campuses with some first-year students residing on a different campus from where their classes are held. Some students viewed these separate campuses as part of their environment, while other students did not. Some students viewed areas adjacent to campus where local for-profit businesses exist as part of the campus boundary. Some students viewed the campus by the architecture of the buildings. John said, "I feel like the boundaries of the grounds are pretty well defined. You can tell because of the impressive Gothic stonework and nice benches." Michael excluded his residence halls "because...[he] feels like the dorms and

campus are kind of separate" since he lives on the satellite campus. The responses from the students varied widely, but they were largely related to what the students did on campus. Where students went, and what students saw determined their campus boundaries. For these students, what many would assume to be a rather straightforward, objective reality – the campus boundaries are actually more subjective to the individual student experience.

In aggregate, students who under reported were less assured or felt the need to express some reservations about the specifics of the type of information they would include in any given category. For the question regarding time spent preparing for class, students were relatively clear about what types of activities they would include in that category, regardless of whether they were an individual who systematically under reported or accurately/over reported. Commonly cited answers for what types of activities were included were "group projects," "studying," "reading," "essay writing," and "homework," or as Cassandra, a student who systematically under reported, said, "The ones that are listed there [on the CSR] like studying, reading, writing, [and] doing homework." But, the students who under reported were far more likely to more narrowly define the category or express doubts about their responses, even though they ultimately identified the same types of experiences. At least for the category of preparing for class, both groups were relatively consistent in identifying similar activities (e.g., homework, reading for class, studying, writing a paper, etc.), but the students who under reported were far more likely to express doubt or hesitation in their responses. Such reservations may have manifested in these students under reporting, as the same type of person who expressed doubts in an interview when asked what activities were included in the various categories may also be the same type of person who under reported on a survey, as an expression of that same self-doubt and uncertainty. From where does such self-doubt originate?

Norm referencing. When discussing how the students felt their answers compared to their friends or other students on campus, the two populations of students (i.e., under reports and accurate/over reporters) differed in how they thought their answers compared. Both groups of students were most likely to indicate their answers being about the same as their peers or campus friends if they were asked to compare, but if they indicated differing from their peers, the two groups of students indicated they differed in opposite directions. With those students who under reported, they often discussed 'feeling' their answers when compared to their peers would be about the same or a little less. Very rarely did they report feeling their responses would be higher than the rest of the student population or their friends. Cassandra said, "Yeah, I feel like I don't spend more time on my work than most people, but I wouldn't say I spend significantly less." Similarly, Catherine said, "I think the typical [AVU] student would probably spend around the same time preparing for class, and then co-curricular activities probably either the same time or maybe a little more." However, the students who accurately/over reported were far more likely to indicate a perception of being engaged in various activities longer than their peers or being associated with individuals who the students perceived as more serious-minded students. Rachel said her peers spend "probably less study time." Conversely, Michael said his friends "tend to spend a lot of time studying" because they are pre-med or in other majors he considered to be intensive.

However, with relaxing and socializing, both populations of students generally thought they spent less time than their peers engaged in these activities. Rachel thought her relaxing and socializing time was "less [than her peers] just because...[she] feels like people socialize a lot more than...[she] does." Primarily, this appears to be a result of a prevailing perception of how much time their peers on campus spend attending parties and consuming alcohol, and the students' desires to distance themselves from what they perceive as the negative connotations associated with relaxing and socializing. Veronica indicated her peers "maybe they would have [more] socializing time than me" because of their attendance at parties. She also attended such social gatherings, but she did so with what she perceived, as less frequency than her peers because while "it's fun [to go] every other weekend, something like that, but...[she didn't] like to spend half of...[her] time hungover."

Ultimately, though, John's response typified the students from both groups' general attitude about how their responses compared to their peers – "I think the aggregate time people put into that is probably about the same." The students clearly norm-referenced their responses, as evident by the students most commonly indicating their responses would be comparable to their friends and other peers from campus regardless of what they indicated on the instrument. However, if an individual expressed a difference between his peers, students who under reported were more likely to perceive their peers, as being more active on campus than them, and students who accurately/over reported were more likely to perceive their peers, as being less active on campus than them. Once again, such a finding suggests self-doubt may be related to reporting behavior. What causes this pervading sense of self-doubt and inadequacy in comparison to their peers, which appears to be pervasive amongst the students who systematically under report? The students' ecological niches explain how students understand themselves and form their identities in relation to their peers. As discussed in the below subsections about student experiences, the students who under reported experienced more hostility and marginalization in the campus environment than their peers who accurately/over reported on the CSR.

Answers staying constant over time. Students who accurately/over-reported were also confident of the consistency of their answers. When asked how their answers on the CSR might

151

change if they were to re-take the instrument today, they commonly responded, "It would be about the same" (Jessica), or "I think I'd probably keep it the same" (Michael). However, the students who under reported were far more likely to indicate variability in their responses. Cassandra said, "I might have accidently clicked it. I don't know because when I calculate it, that seems really low," and Emily said, "I think I would probably change; maybe I would change the relaxing and socializing." Surprisingly, even though these students under reported, many said they would lower their estimates even further if they were to re-take the instrument. Eleanor thought her response was "a pretty high estimate."

Selecting vague quantifiers. For this population of students, vague quantifiers (e.g., often, occasionally, never, etc.) were context specific with wide variability for both groups between contexts, but very little variability within contexts. As an example, students considered attending an art exhibit twice a semester, as engaging in that activity very often, but they needed to participate in class at least once every class for that to be considered very often.

Such context distinctions can even apply to class type. Cassandra clearly made a distinction between thinking of the vague quantifiers as an amount or quantity of participation, as opposed to an indication of meeting her level of expectations for the applicable setting. For some classes, which were more discussion based, she would expect to participate "at least three times" per class for Spanish because "you're expected to participate a lot; it's a big part of your grade." However, for her British Literature class, she "feels like it's hard for kids to participate, [so] like twice, that's sufficient."

The students in both groups had similar responses for defining vague quantifiers with a clear continuum, as outlined by Eleanor.

It's pretty subjective, but very often I'll be almost always, never obviously never, and then often and sometimes are kind of toss-ups, but I guess often would be more like somewhere between fifty and seventy-five percent....I mean their contextual. So, the amount of time I spend in class is more, so I would ask more questions....Whereas the amount of time I spend attending things [is a lot less]. (Eleanor)

Students commonly cited a sense of relativity with the vague quantifiers depending upon the expectations and prevalence of a given activity. The students appeared to be deciding based upon how much opportunity they perceived to be possible for engagement when deciding upon how to respond to questions using the vague quantifiers. So, if the class was heavily discussion based, the students generally expected themselves to participate at least once a class to qualify that type of activity pattern as often, but if the class was a large lecture course, they only required themselves to participate once a week to consider it often. The students' estimations of their participation patterns and what vague quantifier they ascribed to those patterns was largely a result of the alignment of their behavioral frequencies with their expectations for participation.

The Qualitative Experiences of the Students

How the students formulated responses on the CSR clearly appears to be different based upon how the students report in aggregate. Students who systematically under reported were far more likely to express uncertainty about their responses, narrowly tailor their definitions of categories, and assume their peers were more involved than them. Why would students who under report exhibit these differences in how they understood the CSR and in the construction of their associated responses?

The differential experiences of students on the campus environment may explain why students under report on the CSR. The theoretical model discussed in Chapter Two, which

combined Bronfenbrenner's (2005) human ecology model of development, Bourdieu and Passeron's (1990) theory of social reproduction in education, and Tourangeau and associates' (2000) four phase survey response process, was used to explore the differential impact of students' unique experiences on their reporting behaviors. As shown in Tables 15a and 15b, the great majority of students who elected to participate in the individual interviews identified as Women and as Asian, but enough variability existed in the dataset for gender identity and racial/ethnic identity to understand how personal identity informed campus experiences. The differential experiences of students appeared to shape the students' academic identities or how they thought of themselves as students, which in turn, influenced how they responded on the self-reported survey. The remainder of this section has been structured to explore the students' experiences on the college campus, as a result of their particular ecological niches.

Macrosystem: The influence of racial identity. Factors associated with racial and ethnic identity affected how students were treated on campus, which in turn affected their feelings about the campus environment. When Alyssa who identified as African-American and systematically under reported on the CSR discussed her experiences at school, she highlighted the negative experiences she had because of her racial identity, especially when compared to her high school experiences. Alyssa shared that in high school, "I didn't have to worry about being that black person that was like, what are you doing here?" She also indicated a frustration with how "apathetic" she perceived the student body to be, especially in regards to issues with racial equality. Beyond mere apathy, though, Alyssa discussed experiencing racial hostility on campus.

If I'm walking with a group of white students, you're not going to notice me. Nothing is going to be wrong. When I'm with a group of black students, that's when I notice people

are looking at me, like I know. If I'm walking, and I'm being loud with a group of black students, people are going to look. (Alyssa)

As a result of this, she has "friends who have considered transferring because...it's just too overwhelming for them being a minority here." But for Alyssa, the isolating and hostile campus environment is "something I'm just used to." However, she does indicate on her CSR that if she could start over at this same institution, she probably would not. She sees the environment as actively hostile to her because of her racial and ethnic identity, and these feelings of hostility have affected her desire to continue at the institution.

Bianca who also identified as African American discussed similar experiences of feeling relatively isolated on campus, as she transitioned from a much more heterogeneous high school environment in Chicago to AVU. She discussed the difficulties in her transition to the more homogenous environment at AVU.

When I came here [to AVU] the first thing I noticed was there was a lot of white kids at this school. Second thing I noticed was, "Why is everyone dressed the same? Why are they so preppy?" (Bianca)

Bianca much like Alyssa discussed experiencing the campus environment as an outsider to the prevailing culture who actively sought the company of other students who were likely to be marginalized racially or ethnically by that prevailing campus culture. These other individuals were essential forms of support for her in her transition process.

It was a good first month of walking around campus seeing a black student or a Hispanic student and just giving them the look like, "I see you. We will connect later, but I see you, and I will think about you later." Then, when I realized there were only 350 black

students here I was in so much shock...It's strange. It's very strange thinking I've practically seen every kid here, but I haven't seen every white kid here. (Bianca)

The experiences of Alyssa and Bianca were quite different from Cassandra who also under reported, but identified as White and did not indicate regretting her decision to attend AVU. Cassandra described some of "the stereotype...[of AVU being] just...like a party school filled with a lot of preppy, rich kids, which...she guess[ed] is true," but she distanced herself from those experiences. She said, "If you want to look for that stereotype, you can definitely find it pretty easily, but there are plenty of people who do not fit that which is cool."

More common, though, were the experiences reported by Michael who identified as White and accurately reported. Michael found the environment at AVU to be supportive and conducive to his learning.

Outside of the classroom? I've liked it a lot. The workload is definitely there, so I definitely find myself crammed to do a few hours of work, minimum, every day, but at the same time, I don't feel stressed about it because I have the friends to balance it out. I feel like everything's kind of worked its way into a system that I can manage precisely. (Michael)

Students experienced the campus environment differentially based upon their race, which influenced their connection to the campus environment and the formation of their academic identity. Simply put, Alyssa, Cassandra, and Michael experienced campus in quite different ways in part because of their racial identities, which affected their satisfaction with their college experiences. However, this process could be mitigated or exacerbated by the relative academic preparation the students had and/or the level of support they had from their home communities.

Exosystem: Previous academic preparation & home support. Students' cultural capital in the form of how relatively academically prepared they felt when they arrived on campus as well as the similarities between their high school environments and the college environment appeared to have an effect on their response processes as well. Rachel who accurately/over reported on the CSR in aggregate and identified as Asian said she was "definitely" prepared. She continued, "I went to a small private high school....I think it was really rigorous, and they always emphasized, 'Oh, you're going to be prepared for college.' And, I think that was definitely true." John, another accurate/over-reporter who also identified as Asian, indicated he "imagined [academics] wouldn't be very much different than high school."

Conversely, many of the students who under reported expressed feeling less prepared. Gabrielle who identified as Latina felt AVU is "harder, but its manageable....like it would be the next step after senior year at my high school." She felt prepared, but she still expressed the difficulties involved in her classes. Such experiences, though, were largely atypical for students who under reported. The more common descriptors for high school experiences in comparison to those at AVU were "not as easy as I thought it would be," "adjustment period coming from high school," "a lot more work than I expected," and "studying more." Many students were extremely successful in high school, but they experienced a sense of adjustment once arriving on campus. The experiences of Emily who identified as White and under reported are typical for many of the students who under reported.

I have never been used to having a curve. I always did better on my tests and stuff than everyone else, and tests were never curved in high school. I always got A's. It is weird coming here and knowing that average is a B-, and knowing that a B- is good, because it will curve up. That's just been hard getting used to that. (Emily) Many of the students who under reported discussed performing well academically, but different from their peers who accurately reported, they expected their experiences to be different, and they discussed having to undergo an adjustment period.

In addition to the students' relative level of academic preparation, now that they had arrived on campus the students were also affected by their home communities. Many of the students reported feeling homesick in both populations, but reporting behavior may have been disproportionately affected by the students who felt less academically prepared, racially marginalized, and also felt isolated from home. Gabrielle indicated she felt the adjustment to college was a natural progression from high school for her, and she felt prepared for that adjustment. However, she also indicated feeling "homesick," especially during the first semester of school. Maria who identified as Latina also discussed how she "didn't expect...so much feeling homesick," and Taylor who identified as Asian said "being away from family has been the toughest part" of transitioning to college. Catherine who identified as White also indicated feeling "very homesick at first," and for April who identified as White as well, it was a "hard transition not seeing...[her] family."

Conversely, for those students who accurately reported, some did indicate issues with transitioning to campus and missing their families, but they may have been less impactful upon their reporting behavior because of how prepared they felt academically. Before arriving at college, Jessica who identified as Asian had not anticipated missing her family, and she was excited about the relative freedom college would afford her. However, upon arriving she found "despite all the problems...[she] had at home...[she] still miss[ed] it." Rachel also indicated "not having family around is really hard." While these students also expressed missing their families, their academic identities were far less affected than their peers who also reported not

feeling as academically prepared. When describing her own predicament, Rachel provided an apt description for how the confluence of factors affected students.

I think it's just a combination of being stressed. Stressing myself out over school work and maybe getting irritated with some people and not having my family around. I don't think it's all from being homesick. It's just all building up. (Rachel)

No single factor predicates the students' response patterns, but the feelings of being stressed academically due to relatively less academic preparation, racially marginalized, and isolated from their home communities may have disproportionately affected the students' satisfaction with their campus environment, which in turn affected their reporting behavior on the CSR.

Mesosystems: Sense of belonging and the student peer culture. The relative level of alignment the students experienced in their mesosystems also affected their reporting behavior. Students commonly cited AVU as a fractured experience with many small communities being encompassed within it. The more closely aligned the individuals felt their disparate communities were within the institution the higher they generally reported their sense of belonging to the institution. Michael identified as White, accurately/over reported, and felt positive about the community, but he offered a useful explanation of how students saw themselves within these fractured communities at AVU.

Well, I feel like the...community as a whole is pretty different, it's kind of like split up. In general, I would say sure, but at the same time, it's more of like I'm part of sectors of it, because I don't participate in sports culture that much. I feel like being present at sports games would really make you feel like you're part of the community, while I'm just doing small stuff. I'm more with isolated groups of the AVU community. (Michael) For Michael who identified as White, he felt like he was relatively connected to the larger community, but not as much as he could have been if he were more involved in the prevailing sports culture. For students who had an historically marginalized racial or ethnic identity, they felt disconnected for far more troublesome reasons related to their identities and associated social interactions.

As previously discussed, students with historically marginalized racial or ethnic identities reported experiencing mixed to negative interactions during their time on campus regardless of reporting behavior. Veronica who identified as Latina and under reported said she felt connected with "those smaller communities I've been in," but not necessarily the larger AVU culture. Alyssa who identified as African American offered a possible explanation for why students felt their communities were disconnected.

It's kind of weird because if you're really in with the AVU community then you're seen as white-wash in a way. Then if you're not it's like, you're stopping yourself from enjoying it. It's so contradictory sometimes." (Alyssa)

Accordingly, Gabrielle, who identified as Latina and under reported, said, "I felt like...I didn't belong here." Jessica, who identified as Asian, but accurately/over reported, also indicated feeling disconnected from the campus environment. Jessica said she did not "feel connected yet. Maybe next year. I feel like this year was kind of too hard for me on my own, with emotional and academic problems and stuff like that."

Conversely, many of the students who identified as White within each set of groups viewed their campus experiences, as relatively positive. Michael who accurately or over reported on the CSR in aggregate indicated he "had a blast" at college where he woke "up every morning really excited, just because life has been fantastic." Cassandra who under reported indicated

school, as being "really a lot of fun," and she has "enjoyed everything...[she has] joined." For the students who under reported, but identified as White, they were more likely to feel connected to the campus community because they have been "involved...in clubs... made connections with professors...[and ate] at all the dining halls," so they felt "like...[they were] in the mix" (Catherine). For students who had a marginalized racial identity, they too often felt like they were simply not in the mix

Microsystem and Personal Disposition: Academic identity. All of these experiences ultimately manifested in students' academic identities and influenced how they responded on self-reported surveys. When asked how they would describe themselves as students, those individuals who accurately or over reported used descriptors like "studious," "hardworking," "proactive," and "organized." None of them described themselves as smart or utilized personal attributes to discuss their academic abilities. They all discussed their academic abilities in terms of what they did. Jessica "literally plans out every hour of the day," and John clearly showed a connection between his work ethic and his academic performance, citing the outcome as a direct result of the choices he made.

The environment in which I undertake an academic commitment is very dependent on how well I do in that class. Throughout a lot of my challenging classes in high school, I was consistently a B student. It didn't matter if I were in a lower class or a higher class. I would just be consistently a B student. It's not really good, but that's just sort of...I'm competitive enough to not be any lower than that, but I'm not determined to be any higher than that.

John described his academic experiences, as being almost exclusively a function of his work, and he directly equated his learning with his effort. The thing about class, at least the ones I'm taking, is that it's one of those things where you get out as much as you put in. If I dedicated twice the amount of time than I am now, I probably would be learning so much more from each of my classes. That's the way with

a lot of higher education. It relies so much on a level of personal dedication. For students who identified as Asian, they routinely discussed an intentional focus on their studies, which often resulted in choosing to be less involved in other non-academic related activities. April admitted, "I guess in my fear of getting too involved, I just didn't at all. It just happened without me even realizing it."

However, students who systematically under reported were far more likely to externalize their success, express less certainty about their academic work behaviors, and/or describe what type of student they are with less traditionally positive labels. These students de-emphasized their academic work ethic. When discussing what type of student she considered herself, Alyssa de-emphasized the role of academics in future success and discussed the need to network with other individuals. She also indicated the limits she has accepted for herself.

I'm like okay, college is about making connections with people. Through connections is how you find job opportunities.... I'll do my work, and I'll do it to the best of my ability, but I'm not going to keep going if it's killing me.... I have to leave my room.... I'm out of my room. I count studying with friends as being social. (Alyssa)

Taylor discussed her academic work ethic as well, but provided caveats to her commitment, as she "trie[d] to work hard." She did not think of herself as a hard worker; it was not a skill she possessed, but rather something she attempted to do. Likewise, Cassandra was "not one to usually write down specific goals," and Gabrielle said she had a "really bad tendency to be really apathetic towards everything, so I'm just like, 'Why does this matter?'' These students were also more likely to fault professors or others for their academic performance. When discussing how she has performed academically thus far, Catherine expressed frustration with some of her faculty.

It's dumb because she'll have you write a paper on your feelings, and I just don't know

how I could get an A minus on a paper on my feelings, but whatever. (Catherine) April expressed similar frustrations with one of her professors who she felt caused her to perform poorly on an exam.

If the homework had been on the test topic, I could have used it as a studying tool, but it wasn't. My professor, I don't know what he did with that. I don't know why he did that. I

ended up doing really poorly on the homework. I didn't even do well on the test. (April) The students appeared to form an academic identity in response to how they experienced the campus environment. In turn, this academic identity informed how they responded on the CSR with students who systematically accurately/over reported thinking of themselves, as diligent hard-working students while those individuals who under reported were less certain of their academic identity. The campus environment may have eroded their self-confidence, which affected their academic identity, and this academic identity manifests in reporting behavior.

Mixing the Data

All of the findings from both the quantitative and qualitative phase of this study illustrate the role identity played in how students' differentially experienced the campus environment and responded on self-reported surveys accordingly. Each student had a unique set of experiences and characteristics, which informed how they interpreted the world, and how the world interpreted them. Consider the experiences of Alyssa who reported "friends who have considered transferring because....it's just too overwhelming for them [at AVU] being a minority." The quantitative data supported such an assertion, as the predictor variables of race and regretting college choice were statistically significant ($\chi^2 = 12.848$, $\alpha = .002$) within this sample of students. However, the relationship between race and regretting college choice was actually the strongest for students who identified as Asian. Three of eighteen students who identified as White regretted their college choice; twelve of twenty-three students who identified as Asian regretted their college choice; and two of twenty-four students who identified as AABLM regretted their college choice.

Students who were satisfied with their school choice were 654% as likely to accurately or over report hours spent preparing for class than their peers who indicated regretting their college choice, while students who identified as Asian were 259% more likely to accurately/over report than their peers who identified as White. For students who identified as Asian, their reporting behavior appears to be largely influenced by their satisfaction with their campus environment. If they are satisfied they accurately/over reported, but if they were not, they under reported. However, students who identified as AABLM were 77.1% more likely to under report than their peers who identified as White when controlling for the other factors. All of this supports a finding of a confluence of factors being at play to inform reporting behavior on the CSR. Simply identifying as AABLM affects reporting behavior regardless of satisfaction with college choice, while racial and ethnic identity alone does not explain reporting behavior for students who identified as Asian. Such a finding is likely a result of students who identified as AABLM simply becoming inured to negative experiences, so those negative experiences did not necessarily affect their relative satisfaction with the campus environment in the same way it did their peers who identified as Asian. Students who identified as AABLM expected the campus

environment to be hostile; their expectations were met; and they were habituated to such marginalization from prior experiences and cultural forces originating in their macrosystems.

Bianca who identified as African American and under reported discussed her response to a frustrating classroom discussion when her fellow students were equating their personal experiences to a character's situation in ways she found inauthentic and inappropriate.

It's a lot of not being angry at what people are saying here because they don't know any better. They are ignorant. They are being naïve. But, then it's about me because I'm from a diverse background, because I have gone through more things than they have to explain to them, here's the truth. You need to know the truth. (Bianca)

Alyssa also indicated the isolating and hostile campus environment is "something I'm just used to."

However, while students who identified as AABLM may not have been as likely to be dissatisfied with the campus environment as their peers who identified as Asian, they still systematically under reported. Why? The data suggest these students have had their store of residual esteem and self-confidence steadily attacked by the environment, which affected their academic self-image. For students with historically marginalized racial or ethnic identities like Alyssa, they found the campus environment to be more hostile. The more actively hostile campus environment necessitated more support from the students' home communities. However, when they felt both isolated on campus and isolated from their home communities, their sense of self-worth may have been lessened, and this lessened sense of self-worth may have manifested in the students systematically under reporting. Those students who felt more academically prepared and described themselves with words like "hard-working" and "organized," may have had more resistance to the hostile environment, or they may have experienced the environment in a more

165

positive manner, which influenced their sense of self-worth. However, for their peers, which were expecting a different academic environment, they reported feeling less prepared and expressed feelings of uncertainty and inadequacy, which manifested in the students' reporting behavior. These factors are only exacerbated by other factors within students' mesosystems where they may feel their communities of connection as marginalized from the centralized culture of the college.

Conclusion

The findings from this study clearly call into question the construct validity of selfreported survey data if it is attempting to measure actual behavioral patterns. The students only accurately reported on two of the seven variables of interest in research question one with the reporting behavior for preparing for class and relaxing and socializing being dramatically disparate, as evidenced by the reported effect sizes. Moreover, students' racial identities did affect their reporting behavior for some of the variables of interest with students who identified as White being a statistically significantly predictor of reporting behavior for time spent preparing for class. Likewise, the students' feelings toward their campus environment were also associated with reporting behavior, as reporting being dissatisfied with their college choice was a strong predictor of under reporting time spent preparing for class.

While none of the remaining predictor variables were individually statistically significant for any of the models, the model as a whole with the predictor variables included was a better predictor of aggregate reporting behavior than a model assuming all individuals would under report (i.e., the control model). Consequently, demographic characteristics do appear to be related to student reporting behavior. In answering the third research question, the construct and predictive validity of the CSR time-use metrics was called into question. The CSR time-use metrics were not a statistic significant predictor of any of the NSSE Engagement Indicators, except for volunteering for community service. Time reported on the CSR as being spent volunteering for community service does appear to have some predictive validity for Discussion with Diverse Others, but it once again appears to have a relatively small relationship with how the students actually spend their time volunteering since it did account for additional unique variance in the Engagement Indicator in addition to that already accounted for by the diary metric.

All of this appears to be a factor of how students differentially experience the campus environment and form their academic identity in response to these experiences. Those students who identify as AABLM were more likely to experience the campus as hostile. This hostility compounded with feelings of isolation in their home communities and feeling less prepared by their prior high school experiences to succeed. All of this resulted in these students feeling as if they were underperforming when compared to their peers, and they responded accordingly. Students who identified as AABLM actually studied more than their peers, even though they reported the least amount of hours preparing for class. Theories of why and the associated implications will be further explored in Chapter Five.
CHAPTER 5: DISCUSSION, IMPLICATIONS, AND CONCLUSION Introduction

Utilizing a conceptual model combining Tourangeau and associates (2000) four phase survey response process, Bronfenbrenner's (2005) human ecology model of development, and Bourdieu and Passeron's (1990) theory of social reproduction in education, this study utilized a sequential explanatory mixed methods design to better understand students' self-reported survey response processes. Specifically, how did the students' particular ecological niches inform and influence their understanding of themselves, and how did this understanding of themselves influence how they responded on self-reported surveys? The research questions for this study were the following:

- How do students' responses regarding average weekly hours spent preparing for class, engaging in co-curricular activities, working for pay on campus, working for pay off campus, volunteering for community service, relaxing/socializing, caring for dependents, and commuting to campus compare between time-use diaries and the CSR?
- 2. What are the differences in response patterns between the two instruments based upon student demographic characteristics?
- 3. How do students' responses on the CSR and time-use diaries relate to the NSSE Engagement Indicators?
- 4. Why, if at all, do these differential response patterns exist in this particular college environment?

As a function of mixed methods research designs (and I would argue as a function of all research), my personal dispositions, as the researcher and an individual, are necessarily reflected throughout this study. Consequently, my personal biography as well as the manner in which it

may be reflected throughout this study will be discussed. Then, each research question will be discussed with primary focus given to the discussion of the fourth research question, which required the mixing of the data. Additionally, implications both for practice and for future research will be reviewed, and the chapter will close with concluding thoughts on this phenomenon.

Self-Reflexivity as the Principle Investigator

One of the first questions often posed to me when someone learns of my interest in the research topic of this study is "Why?" I am not certain if I can answer that question fully, as I think this very study would indicate most of us do not fully comprehend our own motivations and actions. However, I believe my interest in this topic is primarily related to my frustration with blind trust in any source of "capital 'T' Truth," whether that be from religion, family, socio-cultural norms, or science coupled with my personal experiences of education, as a tool to potentially promote equality, understanding, and upward mobility. My frustration with blind trust is most likely a reaction to two primary sources within my own life: a sense of being an outsider in my home community and my sense of embarrassment about how much I thought I knew at various points in my life when in retrospect I realize how little I actually understood.

I was born into a working class family who was afforded upward mobility because of a commitment and access to education (as well as our relative privilege as a result of our racial identity). For the first six years of my life, I shared a room with my younger brother and older sister in our single-wide trailer while my father took eight years to finish his bachelor's degree because he could only attend school part-time while he worked to support his family. Fulfilling her culturally gender specified role as the primary caregiver, my mother had to wait to return to college to finish her degree until I was in middle school. Through their collective educational

efforts, though, my parents afforded me and my siblings' opportunities, which were unavailable to them.

For me personally, I always excelled academically, and while my parents valued education and expected me to receive high marks, the community in which I lived valued athletic endeavors far more, so someone who would have been better suited for the debate team, drama, or mathletes dedicated himself to playing high school basketball. But, I was never very good, and I always felt like an outsider – someone who wanted to discuss ideas and debate the nature of existence in a community where most people just wanted to discuss the starting lineup for the local college basketball team. Movies, books, and literature were always my escape to a bigger and broader world than the one in which I was reared, and my understanding and desire to be in a culture I did not know (I did not see the ocean until I was 17 or fly in a plane until I was 21.) made me feel different from my peers and family who I perceived as accepting the rightness of their way of being in a way I could not.

When I went to college, I was able to take a small step away from the homogeneity of my home community to a more heterogeneous environment where I was fortunate enough to have a mentor who identified as African-American and take classes in World Literature and African-American Literature, which introduced me to new and different cultural perspectives. As so often happens with college students, these experiences challenged my previous norms and made me view my prior experiences and culture more harshly. "How foolish I had been to believe what I believed previously," I thought. From there, I have had the fortune to continue to have my norms challenged, as I have traveled to other countries and lived in different regions of the USA, and with each challenge, I feel the same foolishness. It may be trite to acknowledge, but the more I experience the less assured I am of what I know. This uncertainty, though, to me has always been a net positive, and I stifle against individuals who blindly accept their realities as the reality.

Such frustrations have extended to my professional life, which ultimately connect to this specific study. As an individual who has worked in higher education in various capacities for over 14 years, I know how often self-reported surveys are utilized to attempt to provide information about the student experience. When such information is presented as a potential source of information to educate practitioners, prompt earnest reflection, and encourage thoughtful, measured interventions, I appreciate its utility. But, often I have experienced selfreported survey data being used as a weapon to achieve a pre-determined objective or outcome. As a practitioner, I have been guilty of this because I know people will accept the truthiness of numbers. When working as a Director of Campus Recreation, I used usage statistics, economic impact studies, and correlational studies between healthy behavioral choices and student participation in recreation to successfully argue for the construction of new facilities, the addition of new staff positions, the expansion of budgets, and so on. Problematically, though, all of this has a real and substantial cost, and I worry sometime the very educational access my parents experienced, which afforded me the opportunities I have enjoyed, may be eroded by the continued expansion of campus services and the associated rising costs.

Furthermore, my personal history also assuredly affects the manner in which I have written this dissertation as well as the way I coded the diaries and the qualitative interviews. As a function of my dissertation defense, one key recommendation was to assert my findings with more conviction and equivocate less. Such equivocation, though, feels more comfortable to me in writing. When I speak, I can adapt to the reception from the audience, but when I place my opinions in writing, I must be willing to defend them in a manner I often find uncomfortable. Who am I to argue with Astin, Kuh, Tinto, or any of a number of luminaries in higher education research who have used self-reported survey data?

However, I am comfortable postulating this entire exercise as an argument for one possible explanation, not the only source of any explanation. Consequently, this chapter has been revised to assert my findings with more conviction, as they are simply my findings from this study, and these findings are affected by the myriad of choices I made throughout the process. These choices are most easily manifested in the coding process for the diaries and the individual interviews, but they are also evident throughout the paper. Measures such as having other individuals code the diaries to ensure their coding matched mine and disseminating the results of the diaries to the participants helps to alleviate some of the concerns with my biases, but they are inevitably still present. To argue differently for a person who rejects absolutes and blind faith would be inauthentic to this study and myself.

Research Question One: Comparing Answers from the Diary to the CSR

As discussed in the literature review, many studies have found inconsistencies in reporting behavior on stylized surveys (Bowman, 2010; Brenner, 2012; Brenner & DeLamater, 2013; Garry et al., 2002; Groves et al., 2009). However, higher educational researchers still largely rely upon self-reported surveys to measure important student outcomes for many reasons, including the relative ease of collecting and analyzing such information, the relative worth afforded to quantitative research by the academy, and the relatively lower costs of such methodologies. According to this study, if these instruments, are attempting to identify how individuals are actually spending their time, though, they may be rather poor at providing such information.

In answering the first research question, the students did not accurately report how many hours they spent preparing for class, engaging in co-curricular activities, performing community service, relaxing and socializing, or commuting to campus. Interestingly, the only activities the students accurately reported were working for pay on and off campus, which have a specific time-bound schedule. If students are working for pay, they know they work a set number of shifts per week for a set number of hours, so less approximation is required. The other experiences, which the students inaccurately reported, such as preparing for class and relaxing and socializing did not require the students to log, nor count their time. The students were free to study when they would like, sleep when they would like, and attend club meetings as they would like.

They did not have to be mindful of these experiences, and as discussed by Tourangeau and associates (2000), they were consequently less likely to encode such events for future retrieval because they were not landmark events. Since they were not encoded for future retrieval, the students likely relied upon approximation and estimation to formulate their responses on the CSR. Consequently, they did not systematically count and recall hours spent engaged in the various activities in question, but rather they utilized contextual information to consider what they likely did (Schaeffer & Presser, 2003). According to Brenner (2012), such considerations of what individuals likely did are inextricably linked to individuals' perceptions of self, as informed by their unique, culturally informed and situated identities. These results indicate the CSR may lack construct validity if it is attempting to measure how students actually spend their time on campus. Instead, information from self-reported surveys may provide substantively different information about how the students understand themselves, as a function of their campus experiences.

Research Question Two: Systematic Reporting Behavior

Racial and ethnic identity affects student experiences and influences how students respond on self-reported surveys. Students who identified as Asian were over three times as likely to accurately/over report as their peers who identified as White. Conversely, students who identified as AABLM were 77.1% more likely to under report than their peers who identified as White. Such reporting behaviors directly contradict how students actually spent their time. According to data from the diary entries, students who identified as White prepared for class on average 26 to 30 hours per week; students who identified as AABLM prepared for class for more than 30 hours per week on average. So, even though students who identified as AABLM actually spent more time preparing for class than their peers, they reported the least amount of time spent engaged in those activities when responding to the survey.

Such findings explain the apparently contradictory experiences of students who identify as women at single gender institutions, students who identify as African American at HBCUs, and students who attend liberal arts colleges (Astin, 2001; Pascarella & Terenzini, 2005). As discussed in Chapter Two, the relative cognitive gains these students experience are largely contingent upon how those gains are measured. As an example, students who identify as African American who attend HBCUs report higher gains than their peers attending PWIs, but different forms of instrumentation such as those in the Wabash study indicate the exact opposite finding (Pascarella & Terenzini, 2005). The findings from this study indicate such results occur because students are actually responding based upon how they differentially experience the campus environment based upon their racial/ethnic identity; they are not responding based upon how they spend their time. Additionally, these findings further support the work of Bowman (2010) who found students systematically under or over report various cognitive gains based upon their demographic characteristics.

Furthermore, students' racial and ethnic identities were also linked to satisfaction with school choice. The predictor variables of race and whether or not students regretted their college choice were statistically significant ($\chi^2 = 12.848$, $\alpha = .002$) within this sample of students. Students who were satisfied with their school choice were over seven times as likely to accurately or over report hours spent preparing for class than their peers who indicated regretting their college choice. Consequently, the relationship between race and response behavior appears to be indirect. Students who have an historically marginalized racial/ethnic identity were more likely to feel dissatisfied with their school choice, and dissatisfaction with school choice was related to reporting behavior on the CSR. As revealed through the individual interviews, such feelings of regret about college choice were largely a result of feeling disconnected from the campus environment, which as discussed by Tinto (1993), is one of the greatest predictors of student attrition.

An exploration of the relationship between racial/ethnic identity, satisfaction with school choice, and reporting behavior will be explored in further detail when answering the fourth research question, but feelings of marginalization and isolation from the campus environment are likely influencing how students' understand themselves as a result of systematic marginalization within the campus environment, not how students spend their time. As evidence, those students who were dissatisfied with their college decision had a higher median of hours spent preparing for class than their peers who were satisfied, even though they were more likely to report spending less hours than their more satisfied peers. The students' actual behavioral patterns were inversely connected to their satisfaction (i.e., dissatisfied students' median hours spent

preparing for class were more than 30 and satisfied students' median hours spent preparing for class were 26-30). However, satisfied students were over seven times as likely to accurately/over report as their dissatisfied peers. Consequently, depending upon which measurement practitioners and researchers utilized, their underlying understanding of how and why students succeed on campus would be different.

All of this is illustrative of the role identity plays not in what students are doing on campus, but in how they are differentially experiencing the campus environment and responding on self-reported surveys. Consider how students who identified as Asian responded on the CSR, as compared to their peers. Students who identified as Asian in this population studied less than their peers who identified as AABLM and regretted their college choice more, but they were more likely to accurately/over report their behavior than those same peers. Why would students who identify as Asian be more likely to accurately/over report their time spent preparing for class while also being far more likely to report being dissatisfied with their college choice? The theoretical framework proposed in this study offers a compelling argument for why these disproportionate reporting behaviors exist.

A brief review of the prevailing literature about social stereotypes and academic expectations related to individuals who identify as Asian generates articles and books about "tiger moms," model minorities, and other pernicious societal expectations connecting identifying as Asian with educational and academic success, familial pressure to succeed, and an unwillingness to seek professional mental health assistance (Chou & Feagin, 2015; Lee, 2015; Wu, 2013). Conversely, the prevailing images of students who identify as African American within the educational sphere are about Affirmative Action, disparate educational outcomes, and failing urban public school systems (Baez, 2013; Danns & Purdy, 2015). To be clear, I mention none of this to dismiss the experiences and realities facing these populations, but rather to highlight the prevailing messages, which filter through students' macrosystems (Bronfenbrenner, 2015) and may help to shape how students begin to understand themselves and their peers. More troubling, though, is how students' internalizations of these messages manifest in their selfreported surveys, which only further reinforces a system, which differentially impacts them (Butz & Besio, 2010). Bourdieu and Passeron's (1990) theories of social reproduction, as discussed in the theoretical framework, offer an explanation of this phenomenon. Students unwittingly adjusting their responses on the CSR and other self-reported surveys to align their reported behavioral patterns with the expectations proffered for them by prevailing societal norms and the campus culture is a form of self-censorship, which works to benefit the dominant cultural arbitrary (Bourdieu & Passeron, 1990). By aligning their responses on the CSR with prevailing cultural norms and expectations (which are actually the exact opposite of how the students actually spent their time according to the diaries), the students' responses further legitimate cultural expectations and norms, which reinforce pernicious and disparate educational outcomes. The students' responses on the CSR provide legitimacy to an illegitimate system filled with marginalizing experiences. The results of the self-reported survey can be used to justify disparate educational outcomes for students who identify as AABLM as a result of studying less in comparison to their peers when in actuality they studied the most, but they were forced to do so in an environment that is actively hostile to their success, which threatens the dominant cultural arbitrary.

Research Question Three: Comparison to NSSE Engagement Indicators

In this study, the measurements for how students spent their time, whether measured through the diary entries or the CSR, were a relatively poor predictor of the NSSE Engagement

Indicators. Two possible interpretations could explain such a finding. If quantity of time spent engaged in educationally purposeful activities is indeed an important proxy of student success, the results for the third research question cast doubt upon the construct validity of the NSSE Engagement Indicators. Conversely, since the NSSE (2010a) Engagement Indicators have been shown to have strong predictive properties for outcome measures such as GPA, quantity of time spent engaged in various activities may simply be irrelevant, as mere quantity does not indicate quality nor account for individual differences amongst students. See Tables 16a, 16b, and 16c, for a complete list of how NSSE (2014e) defines the engagement indicators.

First, if time spent preparing for class is an important proxy for student success, some relationship between such time allocation by the students and NSSE (2014e) Engagement Indicators such as identifying "key information from reading assignments" (i.e., Learning Strategies), learning "something that changed...[the students'] understanding [of] an issue or concept" (i.e., Higher-Order Learning), or working with "other students on course projects or assignments" (i.e., Collaborative Learning) should be expected. However, time spent preparing for class was not a statistically significant predictor for any of these engagement indicators (NSSE, 2014e). The only individual predictor that was statistically significant in any of the models was the one for time spent engaged in community service, as reported in the diary, with discussions with diverse others, which would support the construct validity of that particular indicator.

	Examples of Response Information Included
NSSE Engagement Indicators	in Indicator
Higher-Order Learning "This engagement indicator captures how much students' coursework emphasizes challenging cognitive tasks such as application, analysis, judgment, and synthesis."	 During the current school year, how much has your coursework emphasized the following: Applying facts, theories, or methods to practical problems or new situations Evaluating a point of view, decision, or information source
Reflective & Integrative Learning "Instructors emphasizing reflective and integrative learning motivate students to make connections between their learning and the world around them, reexamining their own beliefs and considering issues and ideas from others' perspectives."	 During the current school year, how often have you: Combined ideas from different courses when completing assignments Connected your learning to societal problems or issues
Learning Strategies "College students enhance their learning and retention by actively engaging with and analyzing course material rather than approaching learning as absorption. Examples of effective learning strategies include identifying key information in readings, reviewing notes after class, and summarizing course material."	 During the current school year, how often have you: Identified key information from reading assignments Reviewed your notes after class Summarized what you learned in class or from course materials
Quantitative Reasoning "Quantitative literacy—the ability to use and understand numerical and statistical information in everyday life— is an increasingly important outcome of higher education. All students, regardless of major, should have ample opportunities to develop their ability to reason quantitatively—to evaluate, support, and critique arguments using numerical and statistical information."	 During the current school year, how often have you: Reached conclusions based on your own analysis of numerical information (numbers, graphs, statistics, etc.) Used numerical information to examine a real-world problem or issue (unemployment, climate change, public health, etc.)

Table 16a. Definitions and Types of Response Information Included in the NSSE Engagement Indicators

Source: NSSE (2014e)

Collaborative Learning "Collaborating with peers in solving problems or mastering difficult material deepens understanding and prepares students to deal with the messy, unscripted problems they encounter during and after college. Working on group projects, asking others for help with difficult material or explaining it to others, and working through course material in preparation for exams all represent collaborative learning	 During the current school year, how often have you: Asked another student to help you understand course material Explained course material to one or more students
activities." Discussions with Diverse Others "Colleges and universities afford students new opportunities to interact with and learn from others with different backgrounds and life experiences. Interactions across difference, both inside and outside the classroom, confer educational benefits and prepare students for personal and civic participation in a diverse and interdependent world."	 During the current school year, how often have you had discussions with people from the following groups: People from a race or ethnicity other than your own People from an economic background other than your own
Student-Faculty Interaction "Interactions with faculty can positively influence the cognitive growth, development, and persistence of college students. Through their formal and informal roles as teachers, advisors, and mentors, faculty members' model intellectual work, promote mastery of knowledge and skills, and help students make connections between their studies and their future plans."	 During the current school year, how often have you: Talked about career plans with a faculty member Worked with a faculty member on activities other than coursework (committees, student groups, etc.)

Table 16b. Definitions and Types of Response Information Included in the NSSE Engagement Indicators, Continued

Source: NSSE (2014e)

Effective Teaching Practices "Student learning is heavily dependent on effective teaching. Organized instruction, clear explanations, illustrative examples, and effective feedback on student work all represent aspects of teaching effectiveness that promote student comprehension and learning."	 During the current school year, to what extent have your instructors done the following: Clearly explained course goals and requirements Taught course sessions in an organized way
Quality of Interactions "College environments characterized by positive interpersonal relations promote student learning and success. Students who enjoy supportive relationships with peers, advisors, faculty, and staff are better able to find assistance when needed, and to learn from and with those around them."	 Indicate the quality of your interactions with the following people at your institution: Students Academic advisors Faculty Student services staff (career services, student activities, housing, etc.) Other administrative staff and offices (registrar, financial aid, etc.)
Supportive Environment "Institutions that are committed to student success provide support and involvement across a variety of domains, including the cognitive, social, and physical. These commitments foster higher levels of student performance and satisfaction. This Engagement Indicator summarizes students' perceptions of how much an institution emphasizes services and activities that support their learning and development."	 How much does your institution emphasize the following: Providing support to help students succeed academically Using learning support services (tutoring services, writing center, etc.) Encouraging contact among students from different backgrounds (social, racial/ethnic, religious, etc.)

Table 16c. Definitions and Types of Response Information Included in the NSSE Engagement Indicators, Continued

Source: NSSE (2014e)

Students who engage in more community service likely have an opportunity to engage with more individuals who have different perspectives and life experiences than their peers who volunteer less. Interestingly, though, only the number of hours, as shown on the diary statistically significantly predicted this outcome when including the CSR information. Time spent engaged in community service according to the CSR had an inverse relationship ($\beta = -3.670$) to discussion with diverse others, as compared to the positive relationship when controlling for the other

factors exhibited by time spent engaged in community service when measured by diary entries ($\beta = 6.194$). Overall, little connection is shown between the measures of how students spend their time and the engagement indicators.

However, some discrepancy should be expected, as many of the listed items in the engagement indicators would not reasonably be connected to how much time students spend preparing for class, engaging in co-curricular activities, or volunteering for community service. As an example, how many hours a student spends preparing for class would not necessarily be directly connected with how often students discuss their career plans with faculty members or how organized their instructors were in presenting the material. In fact, an inverse relationship between the organization of an academic course and time spent preparing for that class could be theorized, as disorganization by an instructor may require students to spend more time on their own outside of class reading notes and engaging with various activities to perform well in the course.

Furthermore, the variance accounted for by the model in the engagement indicators were almost all insignificant (i.e., ranging from as little as .1% to as much as 17%). Some of this may have been a result of this particular study being relatively under-powered, but the p-values for all the model change statistics were high suggesting little of the unique variance (except for Discussion with Diverse Others) was uniquely contributed by the CSR predictors, as compared to a model with just the diary entry predictors. While one could interpret the lack of unique additional variance accounted for by adding the CSR time-use metrics to the model as evidence of its construct validity, the lack of statistical significance appears to be more of a function of the poor relationship with any of the measures to the engagement indicators. Simply put, how much time students spend preparing for class, engaging in co-curricular activities, or volunteering seems to have very little to do with the Engagement Indicators, so if time indeed matters, the construct validity of the Engagement Indicators is questionable.

However, these findings may also be explained by the time-use measures being inadequate proxies of student success. Problematically, neither the CSR nor the diaries can account for the quality of the time the students spent engaged in various activities. Each simply measured the quantity of the time spent by the students, and they were unable to account for unique differences amongst the students. Some students may have needed to spend a disproportionately higher number of hours engaged in academic activities to be successful than their peers because they had different latent capacities. Neither instrument can fully capture such individualized realities, but clues may be provided in how the students discussed the vague quantifiers.

Responses using vague quantifiers are almost always norm referenced (McCormick & McClenney, 2012), and within this population of students, the students' definitions of the vague quantifiers (e.g., very often, often, sometimes, and never) were relatively fluid. The students routinely used context-bound information to assist with defining the terms of their engagement when assessing quantity. If a class was a discussion-based literature course, they expected themselves to participate at least daily to consider that often. However, if the course was a large lecture based course, they expected themselves to participate once a week to consider that often. The definition of often changed by the students' expectations of the environments in which they were placed. Similarly, their perceptions and individualized experiences of time may be fluid as well. As Czikzxentmihalyi (2008) discusses, individuals experience time differently and differentially spend time based upon the alignment of task and interests, skills, and expertise. Consequently, the relationship between quantity of time and student success may be inversely

183

proportional. Students with higher aptitudes in certain areas may simply need less time to complete associated tasks, or they may experience and report time spent engaged in such tasks differently because they were immersed in the activity. Most of us can remember experiences of total immersion in a task we found appropriately and pleasingly challenging when the time send to pass quickly. This study cannot speak specifically to students' expectations and experiences of time, but it raises the question of the validity of time as a useful metric for measuring student success.

Question Four: Why Do These Patterns Exist?

In aggregate, students under reported for all of the variables of interest, except for hours spent working. Some predictor variables related to racial identity (i.e., identifying as White) and whether or not students regretted their college choice were related to reporting behavior when controlling for other factors. Why might these differential patterns exist in the dataset? The theorized survey response process model provides an interesting theoretical lens to consider how a confluence of factors affects reporting behavior. Factors occurring within the students' macrosystems regarding racial injustice and prevailing cultural attitudes about education affect reporting behavior, which is a form of social reproduction. Consequently, the greater the disparities between the students' home environments (i.e. primary habitus) and the institutional environment, the more likely the students were to report negative experiences and feelings of isolation from the campus environment. These negative experiences resulted in the students being more likely to indicate regretting their college choice. Regretting their college choice was related to being far more likely to under report how much time they spent preparing for class. Such conclusions are supported by the quantitative findings for research question two and the students' lived experiences on campus. As an example, Alyssa who identified as AfricanAmerican discussed feelings of students being openly hostile to her because she is a racial minority on campus, which contrasts quite a bit with Michael who identified as White and discussed how excited he was to awake in the morning to experience another day on campus.

Overall, students who identified as White were more likely to experience the campus environment in a positive way, and as a result, they were more likely to accurately/over report than their peers who identified as AABLM. Conversely, though, their peers who identified as Asian were even more likely to accurately/over report than their peers who identified as White, but they were also more likely to report regretting their college choice. When controlling for racial/ethnic identity and the other factors, college choice is significant, but identifying as Asian was not a statistically significant predictor. Likely, this is because of how many students who identified as Asian indicated regretting their college choice. For that subset of the population, identifying as Asian did not predict reporting behavior, but college satisfaction did. As discussed when considering the second research question, the students who identified as Asian may have also been constructing their responses about how many hours they spent preparing for class as a result of the cultural expectations for them. However, those students who identified as Asian, but under reported hours spent preparing for class were far more likely to discuss feeling isolated from campus than their peers who accurately/over reported.

Ultimately, a confluence of factors affects how students understand themselves and form their academic identities. The students who accurately/over reported were far more likely to describe their academic identity in terms of their work ethic. Conversely, their peers who under reported were far more likely to be unsure of their academic identities or to externalize the issues they experienced with academics. The qualitative data indicates students feel isolated on the campus environment as a result of their academic preparation and racial/ethnic identity. Many

185

students feel homesick, but for the students who already feel marginalized, these feelings of isolation from their home communities only further exacerbate their feelings of marginalization from the campus environment. Such feelings of marginalization erode the students' reserves of self-confidence in their academic abilities, which causes them to reduce the number of hours they report spending engaged preparing for class. All of this serves to support the underlying myth of the legitimacy of the educational system because the students do not question why they feel marginalized or isolated, but rather assume they are not working as hard as their peers, which, as evidenced by the diaries, is actually not the case (Bourdieu & Passeron, 1990).

Further complicating the use of the CSR to inform important student outcomes is students' understandings of the concepts discussed on the CSR. They appear to be rather limited, especially for the concept of co-curricular engagement. Students almost universally only included experiences, which were highly organized and structured like club activities. Additionally, the students who accurately reported were far more likely to be assured of the consistency of their answers over time, and when each group of students discussed norm-referencing, they did so differently. Both groups generally indicated feeling they were similar to their peers, but the students who under reported were far more likely to indicate their peers engaged in certain activities more than they did, and the students who accurately/over reported were far more likely to indicate they were more active/involved. All of this lends further credence to students responding to the CSR not by what they literally did, but by how they think of themselves, and this seems to largely be a factor of how the students differentially experienced campus based upon their previous experiences and ecological niches.

Ultimately, these findings indicate the proposed theoretical framework for this study fits the data well. However, this is only one possible model through which to understand these data

and is not intended to represent the only interpretative lens for how students formulate such responses. Students form their understanding of themselves through the messages distilled from their macrosystems (Bronfenbrenner, 2005) about cultural attitudes related to race, ethnicity, and gender. The relative support or disconnect they feel between their home communities and their campus environment (i.e., exosystem) affects their sense of belonging on the campus environment, which in turn affects their level of disconnection. All of this then manifests in student reporting behavior, which may be especially pernicious, as it simply reinforces these dominant culturally arbitrary scripts about how and why students succeed (Bourdieu & Passeron, 1990), which have nothing to do with what the students are actually doing while on campus. Problematically, this same information may then be used to justify programs and services, which only further exacerbated educational inequities, and thus further legitimate the system.

Takeaways

Much of higher education research utilizes self-reported survey data to make inferences about how and why students persist to graduation, succeed academically, and gain important non-cognitive skills (Pascarella & Terenzini, 2005). However, the findings from this study seriously call into question the construct validity of such instrumentation and indicate the information obtained from such instruments may have less to do with how students actually spend their time and more about how they understand themselves as a result of their socialenvironmentally influenced realities. As opposed to revealing "objective truth," such instruments may in fact be far more revealing of students' subjective realities. Consequently, some key findings from this study are the following:

1. Students do not accurately report their behavioral frequency patterns unless they are for events and activities, which are specifically time-bound like working for pay on and off

campus. Consequently, the construct validity of self-reported surveys if they are attempting to measure actual behavioral patterns is dubious.

- 2. Students' reporting behaviors on self-reported surveys are systematically influenced by how they experience the campus environment, and how students experience the campus environment is directly influenced by their ethnic/racial identities, relative academic preparation, and connection to home communities. Consequently, how students report their behavioral frequency patterns may be more illustrative of how the students differentially experience the campus environment
- 3. These differential experiences affect students' satisfaction with their campus environment, which is a strong proxy for reporting behavior. While this study cannot explicitly state dissatisfaction with the campus environment causes students to under report, reporting being dissatisfied with one's college choice is a strong predictor of under reporting.
- 4. Students may systematically under report as a means of legitimizing the educational process because rather than question their differential experiences, they internalize their struggles. For marginalized populations, this is especially problematic because they actually work the most (according to the diary entries), but it would appear they work the least (according to the self-reported surveys). Such a finding aligns closely with the proposed theoretical framework, as these students are engaging in a form of self-censorship (Bourdieu & Passeron, 1990) through their response patterns. This self-censorship is affected by how the students experience the campus, as a result of their relative cultural capital (Bourdieu & Passeron, 1990), which affects their microsystem on

campus (Bronfenbrenner, 2005). These experiences in turn affect how the students engage in the four-phase survey response process (Tourangeau et al., 2000).

5. Finally, the measurement of time may not be particularly useful in considering factors related to student success. As shown in this study, time is an amorphous quantity for students who are often not engaged in regimented activities. Furthermore, the simple measurement of quantity of time does little to indicate the quality of time, and the findings from the individual interviews and how students defined vague quantifiers supports these considerations.

Implications for Practitioners

For practitioners, the results of this study have several implications regarding how to appropriately utilize data to inform practice. First, the accuracy of self-reported data is seriously called into question if it is attempting to measure how students are literally spending their time. To be blunt, students, like most individuals, are not good at recalling how they spend their time, especially when asked about relatively mundane tasks. Perhaps more disconcerting, though, the information garnered from the self-reported surveys would not even necessarily provide accurate information for between groups' comparisons. Within this study, the CSR information would lead practitioners to believe students who identified as AABLM spend less time studying than their peers when they actually spend more.

What may be far more important to student outcomes is how students feel about their campus experience. Studies from Tinto (1993), Kuh (2005), Astin (1984), and others have all discussed the importance of what students do on a college campus, but perhaps what is more important is how students feel about what they do on a college campus. How do we encourage students to reflect upon their experiences and consider the types of experiences they are currently

having? Tinto (1993) discussed feelings of disconnection from the college environment and feelings of homesickness being a pull factor away from campus for students, but this study suggests those same feelings may be a factor for how students report their experiences. As opposed to encouraging disconnection, students who feel especially marginalized may be better served by being encouraged to maintain important connections to home communities.

Furthermore, this study suggests assessment tools measuring such important experiences as inter-cultural effort may be more important to understand important student outcomes (Museus, 2014). Students who identified as AABLM spent more hours preparing for class than their peers on average, but reported the fewest number of hours engaged in such activities. If practitioners were to attempt to use this information, they may incorrectly assume the solution to the issue is to encourage these students to study more when in fact they already study more than their peers. Differential success rates would appear to have more to do with the students' relative cultural capital and how supported they feel by the campus environment. Ultimately, I would counsel practitioners to be leery of drawing concrete, objective conclusions from self-reported survey data, which does not mean disregarding such information. Instead, the interventions designed from such data should focus less on encouraging concrete behaviors and focus more upon addressing the systems of inequity on a college campus, which disproportionally impact students who identified as AABLM. In truth, even the need to aggregate this population into one group based upon the number of respondents is telling. Why did this group of students participate at such a lower rate than their peers who identified as Asian? They were systematically over sampled as well, but they were less proportionally represented at AVU than students who identified as Asian or White.

Finally, what practitioners consider to be co-curricular involvement and what the students consider to be co-curricular involvement may in fact be quite different. The students in this study had a far more restrictive definition than most practitioners would likely have with the students only referencing highly organized activities. Consequently, to more fully understand how experiences like using the recreation center, meeting with the resident advisor, or attending on-campus speakers impact student outcomes, practitioners need to ask these questions directly, as the students are unlikely to include them in their own definitions of co-curricular involvement.

Implications for Researchers

This study calls into question the measurement of quantity of time as an important metric for student success. While the students were not asked specifically about their experiences of time, their responses related to the definitions of vague quantifiers offers intriguing clues about how context-based the perception of time is for most students. Furthermore, quantity of time cannot account for individualized differences amongst students, nor the quality of the output. Does how much time students spend engaged in various activities actually matter to student success? Assuredly, they must spend some time doing homework and writing papers if they are going to receive satisfactory grades to continue with matriculation, but is there a magic number of hours? Can students spend too much time preparing for class? Better understanding students' experience of time would be beneficial to further contextualize their responses.

However, if researchers are truly attempting to ascertain how students are actually spending their time, the use of diaries, as a data-collection method, are going to prove more valuable than self-reported survey data because it eliminates issues with the cognitive processing demands for the respondents. As Tourangeau and associates (2000) discuss, the issues, which can arise in the survey response process are many, but they most commonly occur when an individual is being asked to report upon relatively mundane, commonplace activities because those types of activities are not coded for later retrieval. Consequently, individuals respond not with what they actually do, but rather with what they likely did, which is inextricably linked to how we understand ourselves (Willis, 2005). This clearly affected how students responded on their CSR, and in all probability, this influences how individuals respond on all self-reported survey instruments.

Unfortunately, social scientists reliance upon self-reported surveys have resulted in a multitude of advanced computer software programs to assist with collecting and analyzing this type of data, but nothing similarly exists for time use diary data collection. Consequently, I can unequivocally say the use of such data collection methods is in fact quite labor intensive, as it required countless hours to individually code and re-code to ensure consistency. Since no software programs exist to facilitate time-use diary data collection, survey software had to be manipulated to individually collect the information through the administration of what were essentially five individual survey instruments.

The types of activities in which students engage with regularity are relatively predictable. So, the creation of an advanced software program, which could automatically recognize and categorize these activities would make the use of such methods far easier. However, some of the information provided by the students would still require some individual coding, as such methods required an in-depth knowledge of the particular campus culture being assessed, as the terminology used by the students was often incomplete and idiosyncratic. Knowing the particular idioms for the campus recreation center and student organizations was essential to know how to code the items. Without this knowledge, the coding process would have been nearly impossible. Finally, the other benefit of using these types of methodologies is how much more intimate the information provided becomes. Being guided by the students throughout the course of their days to learn when they are eating alone, watching Netflix, riding a train to an offcampus party, or studying provides such a more nuanced and clearer picture of how students spend their time on a college campus. With whom do they associate? How much time do they spend alone? What do they do with their time? Looking at aggregate survey data does not tell you how many hours Jacob spent studying alone, nor would the individual interview conducted with Jacob, but following along with him through his diaries, I could see how many hours he spent engaged in activities to prepare for class. I could see when Veronica traveled to New York City for a film festival or the number of hours spent by Jasmine engaged in religious activities. The rich detail of the diaries coupled with the individual interviews afforded me the opportunity to understand the students' experiences in a way a simple survey could not.

Implications for Future Research

This study needs to be scaled to a larger sample size. In all likelihood, many more of the predictor variables would have been statistically significant had more cases been included in the study, but such scalability will require the creation and implementation of a software package to better facilitate the analysis. Additionally, utilizing a mobile format may have further assisted with improving the response rate, so creating a program, which is both mobile friendly and includes some automatic coding functions would be essential. Additionally, connecting response behaviors to objective student outcomes like persistence rates would help to better understand how response behaviors are formulated and what influences important student outcomes. Is it what students do or how they experience/perceive campus? These phenomena are obviously mutually constitutive, but to move the conversation beyond considering self-reported surveys as

metrics of objective realities, a study similar to this one, but using each set of data to predict student persistence and grades, as measured by GPA would be beneficial.

Conclusion

This study was undertaken not to provide a definitive explanation for how identity may influence student response patterns, but rather to offer a source of possible explanations. In this study, the CSR was a very poor measures of students' objective, concrete experiences as measured by the time-use diaries, but it measured students' experiences of their campus environment quite well. If students were satisfied with their college choice, they reported more hours spent preparing for class. Such a finding does not invalidate the CSR, but it does alter the traditional manner in which the data are commonly interpreted and applied.

Self-reported survey data can provide useful information for practitioners, but how it is utilized is important and has real consequences. Since surveys require students to consider their own experiences and construct their responses accordingly, the students' narrative lens, as informed by their particular ecological niches, shapes the information they share. Consequently, as opposed to using findings from self-reported survey studies to continue to justify expanding programs to encourage differential behavioral choices for particular populations of students, colleges may be well advised to consider initiatives, which combat underlying phenomena of social injustices. These systems of discrimination and inequity cause students to experience college campuses differentially and inequitably, and these differential experiences are reflected in how students report spending their time. While time on task and engagement are likely still important factors for student success, the cultural environment of the institution affects not only student experiences, but also our own understandings of those experiences if we measure them through self-reported survey data. Using multiple methodologies (e.g., individual interviews,

self-reported surveys, observational studies, student narratives, etc.) to provide nuance to our understanding of important student processes will allow practitioners to more fully encourage positive educational outcomes for all students by avoiding drawing incomplete and inaccurate inferences and conclusions from a partial and limited view of the student experience.

Appendix A

Email Correspondence for College Student Report

Initial Invitation Email for Study

Date to be sent: Tuesday, March 10, 2015 Subject: Participate in a [insert University name] Study to Receive a \$10 Gift Card from [insert local restaurant] and be entered into a Drawing for a \$50 Amazon Gift Card!

Dear [insert student first name],

You are invited to participate in a study regarding your experiences at [insert University]. The study consists of three phases of data collection with rewards being awarded for participation in each phase. For this initial phase, you are being asked to complete an online survey, which will take you approximately 15 to 20 minutes to complete.

At the end of the survey, students will be given the option to participate in the random drawing to win one of twenty \$10 gift cards to [insert local restaurant] and one of three \$50 Amazon gift cards. Additional rewards will be awarded for each subsequent phase of the study, including all individual who fully participate in phase two receiving a \$10 gift card to [insert local restaurant] and additional drawings for \$50 Amazon gift cards and other great rewards!

Follow this link to the Survey:

\${l://SurveyLink?d=Take the Survey}

Or copy and paste the URL below into your internet browser: ${l://SurveyURL}$

Follow the link to opt out of future emails: \${l://OptOutLink?d=Click here to unsubscribe}

If you have any questions or concerns about this study, please direct them to me at <u>hottell@bc.edu</u>. Thank you in advance for your participation.

Sincerely,

Derek Hottell Doctoral Candidate in Higher Education Administration Boston College Lynch School of Education

First Reminder Email

Date to be sent: Thursday, March 12, 2015

Subject: Still Time to Participate in [insert University] Study for a Chance to Win Great Rewards!

Dear [insert student first name],

You still have an opportunity to participate in a study regarding your experiences at [insert University].

The study consists of three phases of data collection with rewards being awarded for participation in each phase. For this initial phase, you are being asked to complete an online survey, which will take you approximately 15 to 20 minutes to complete.

At the end of the survey, students will be given the option to participate in the random drawing to win one of twenty \$10 gift cards to [insert local restaurant] and one of three \$50 Amazon gift cards. Additional rewards will be awarded for each subsequent phase of the study, including all individuals who fully participate in phase two receiving a \$10 gift card to [insert local restaurant] and additional drawings for \$50 Amazon gift cards and other great rewards!

Follow this link to the Survey:

\${1://SurveyLink?d=Take the Survey}

Or copy and paste the URL below into your internet browser: ${l://SurveyURL}$

Follow the link to opt out of future emails: \${1://OptOutLink?d=Click here to unsubscribe}

If you have any questions or concerns about this study, please direct them to me at <u>hottell@bc.edu</u>. Thank you in advance for your participation.

Sincerely,

Derek Hottell Doctoral Candidate in Higher Education Administration Boston College Lynch School of Education

Final Reminder Email

Date to be sent: Thursday, March 19, 2015 Subject: Final Chance to Participate in a [insert University] Study for a Chance to Receive a \$50 Amazon Gift Card!

Dear [insert student first name],

This is your final chance to participate in a study regarding your experiences at [insert University].

The study consists of three phases of data collection with rewards being awarded for participation in each phase. For this initial phase, you are being asked to complete an online survey, which will take you approximately 15 minutes to complete.

At the end of survey, students will be given the option to participate in the random drawing to win one of twenty \$10 gift cards to [insert local restaurant] and one of three \$50 Amazon gift cards. Additional rewards will be awarded for each subsequent phase of the study, including all individuals who fully participate in phase two receiving a \$10 Gift Card to [insert local restaurant] and additional drawings for \$50 Amazon gift cards and other great rewards!

Follow this link to the Survey:

\${l://SurveyLink?d=Take the Survey}

Or copy and paste the URL below into your internet browser: ${l://SurveyURL}$

Follow the link to opt out of future emails: \${1://OptOutLink?d=Click here to unsubscribe}

If you have any questions or concerns about this study, please direct them to me at <u>hottell@bc.edu</u>. Thank you in advance for your participation.

Sincerely, Derek Hottell

Doctoral Candidate in Higher Education Administration Boston College Lynch School of Education

Appendix B

College Student Report

Informed Consent for Taking Part as a Subject in a Research Study titled "The Story of Who I Am: Exploring Self-Reported Data in Higher Education as an Artifact of Socio-environmentally Influenced Behavior"

Introduction:

You are being asked to participate in a research study titled "The Story of Who I Am: Exploring Self-Reported Data in Higher Education as an Artifact of Socio-environmentally Influenced Behavior." You were selected to participate in this project because you are a first-year student enrolled in a highly selective four-year higher education institution. We ask that you read this form and ask any questions that you may have before agreeing to be in the study.

Purpose of the Study:

The purpose of this study is to better understand how students' responses on self-reported surveys may be influenced by their experiences of their campus environments, as a function of their multifaceted identities. People who take part in this study will include about 1,000 first-year college students at BC from different majors.

Description of Study Procedures:

This study will be conducted in three phases. The first phase of data collection is an online survey, which should take you approximately 15 to 20 minutes to complete.

After completing the initial online survey, all respondents will be invited to participate in the second phase of data collection. The second phase of data collection will be conducted through the completion of five time-use diaries over the span of three weeks, and each diary entry will take the participant approximately 10 minutes to complete.

For the final phase of data collection, participants will be purposefully selected based upon their initial responses in phase one and phase two. Those individuals who choose to participate after being invited will be asked to complete a one-on-one, in-person interview, which will take approximately one hour to complete.

Risks to Being in Study:

There are no expected risks of participating in this study. There may be risks unknown at this time.

Benefits of Being in Study:

You will receive a report of how you spend your time in a typical week. All the students will receive this benefit if they persist in the study.

Compensation:

At the end of the survey, students will be given the option to participate in the random drawing to win one of twenty \$10 gift cards to El Pelon and one of three \$50 Amazon Gift Cards. Individuals who fully participate in phase two of data collection by submitting all five diary entries will receive a \$10 gift card to El Pelon, and for each diary entry submitted, an individual will be entered into a drawing to win a \$50 Amazon gift card. Finally, those individuals who participate in the final phase of data collection will receive a \$10 Amazon gift card. There are no costs to you associated with your participation.

Keeping Things Private:

This Principal Investigator will exert all reasonable efforts to keep your responses and your identity confidential. The online survey and time-use diaries will be administered through Qualtrics, which is password protected; all hard copies of data will be scrubbed of individually identifying information and will be kept in a locked file cabinet, and recordings of individual interviews and the associated transcripts will

be anonymously labeled and stored electronically in a password protected drive. Please note that regulatory agencies, the Boston College Institutional Review Board, and Boston College internal auditors may review research records.

Voluntary Participation/Withdrawal:

Your participation is voluntary. If you choose not to participate it will not affect your relations with Boston College. You are free to withdraw or skip questions for any reason. There are no penalties for withdrawing or skipping questions. If you wish to opt-out of the study, a link to do so is provided in all email correspondences.

Contacts and Questions:

If you have questions or concerns concerning this research you may contact the Principal Investigator, Derek Hottell, at 617-552-3470 or hottell@bc.edu or the Dissertation Adviser, Dr. Heather Rowan-Kenyon, at 617-552-4797 or heather.rowan-kenyon@bc.edu. If you have questions about your rights as a research participant, you may contact the Office for Research Protections, Boston College, at 617-552-4778 or <u>irb@bc.edu</u>.

Copy of Consent Form:

You will be given a copy of this form to keep for your records and future reference.

Statement of Consent:

I have read (or have had read to me) the contents of this consent form and have been encouraged to ask questions. I have received answers to my questions. I give my consent to take part in this study. I have received (or will receive) a copy of this form.

Signature/Dates:

I consent to participate in this study.

Consent Given

Instructions: Please answer the following questions about your experiences at [insert University]. Your responses are automatically saved, so you are free to take as many breaks, as you would like, and complete the survey in installments. It should take approximately 15 – 20 minutes to complete the survey in its entirety. Additionally, you may skip or not respond to any questions, which make you uncomfortable, or you do not want to answer. At the end of the survey, you will be given the option to participate in a random drawing to receive one of twenty \$10 gift cards to [insert local restaurant] and one of three Amazon gift cards. Thank you for your participation.

	Very Often	Often	Sometimes	Never
Asked questions or contributed to course discussions in other ways	0	0	0	O
Prepared two or more drafts of a paper or assignment before turning it in	o	o	o	O
Come to class without completing readings or assignments	0	0	0	О
Attended an art exhibit, play, or other arts performance (dance, music, etc.)	0	O	0	о
Asked another student to help you understand course material	0	0	0	О
Explained course material to one or more students	•	•	•	O
Prepared for exams by discussing or working through course material with other students	0	0	0	O
Worked with other students on course projects or assignments	0	o	0	O
Gave a course presentation	0	0	0	O

During the current school year, about how often have you done the following?

	Very Often	Often	Sometimes	Never
Combined ideas from different courses when completing assignments	0	0	O	О
Connected your learning to societal problems or issues	0	0	О	O
Included diverse perspectives (political, religious, racial/ethnic, gender, etc.) in course discussions or assignments	0	0	O	О
Examined the strengths and weaknesses of your own views on a topic or issue	0	0	О	C
Tried to better understand someone else's views by imagining how an issue looks from his or her perspective	0	0	O	О
Learned something that changed the way you understand an issue or concept	•	0	O	О
Connected ideas from your courses to your prior experiences and knowledge	0	0	O	O

During the current school year, about how often have you done the following?

	Very Often	Often	Sometimes	Never
Talked about career plans with a faculty member	О	0	0	O
Worked with a faculty member on activities other than coursework (committees, student groups, etc.)	О	0	0	О
Discussed course topics, ideas, or concepts with a faculty member outside of class	O	O	o	О
Discussed your academic performance with a faculty member	O	0	0	O

During the current school year, about how often have you done the following?

During the current school year, how much has your coursework emphasized the following?

	Very much	Quite a bit	Some	Very little
Memorizing course material	O	O	O	О
Applying facts, theories, or methods to practical problems or new situations	o	o	0	O
Analyzing an idea, experience, or line of reasoning in depth by examining its parts	0	0	0	О
Evaluating a point of view, decision, or information source	0	0	0	о
Forming a new idea or understanding from various pieces of information	0	0	0	O
EXPLORING SELF-REPORTED DATA

	Very much	Quite a bit	Some	Very little
Clearly explained course goals and requirements	0	О	О	О
Taught course sessions in an organized way	0	О	О	О
Used examples or illustrations to explain difficult points	0	О	О	О
Provided feedback on a draft or work in progress	0	О	О	О
Provided prompt and detailed feedback on tests or completed assignments	0	0	0	О

During the current school year, to what extent have your instructors done the following?

During the current school year, about how often have you done the following?

	Very Often	Often	Sometimes	Never
Reached conclusions based on your own analysis of numerical information (numbers, graphs, statistics, etc.)	0	0	0	0
Used numerical information to examine a real- world problem or issue (unemployment, climate change, public health, etc.)	O	0	O	0
Evaluated what others have concluded from numerical information	0	0	0	0

During the current school year, about how many papers, reports, or other writing task of the following lengths have you been assigned? (Include those not yet completed.)

	None	1-2	3-5	6-10	11-15	16-20	More than 20 papers
Up to 5 pages	О	О	Ο	О	О	О	О
Between 6 and 10 pages	О	O	O	O	O	О	O
11 pages or more	Ο	Ο	0	Ο	Ο	Ο	Ο

During the current school year, about how often have you had discussions with people from the following groups?

	Very Often	Often	Sometimes	Never
People of a race or ethnicity other than your own	Q	0	0	О
People from an economic background other than your own	O	0	0	O
People with religious beliefs other than your own	О	O	0	O
People with political views other than your own	0	0	0	O

During the current school year, about how often have you done the following?

	Very Often	Often	Sometimes	Never
Identified key information from reading assignments	0	0	0	0
Reviewed your notes after class	o	O	0	O
Summarized what you learned in class or from course materials	0	0	0	0

During the current school year, to what extent have your courses challenged you to do your best work?

• Very much 7

Which of the following have you done or do you plan to do before you graduate?

	Done or in progress	Plan to do	Do not plan to do	Have not decided
Participate in an internship, co-op, field experience, student teaching, or clinical placement	0	0	0	0
Hold a formal leadership role in a student organization or group	O	0	O	0
Participate in a learning community or some other formal program where groups of students take two or more classes together	0	0	0	О
Participate in a study abroad program	O	O	О	O
Work with a faculty member on a research project	0	O	O	O
Complete a culminating senior experience (capstone course, seminar project or thesis, comprehensive exam, portfolio, etc.	0	0	0	0

About how many of your courses at this institution have included a community-based project (service-learning)?

- O All
- O Most
- O Some
- O None

Indicate the quality of your interactions with the following people at your institution.

	Poor 1	2	3	4	5	6	Excellent 7	Not Applicable
Students	О	Ο	О	Ο	Ο	О	О	О
Academic advisors	О	0	О	0	0	О	0	О
Faculty	О	O	О	O	O	О	Ο	O
Student services staff (career services, student activities, housing, etc.)	0	о	о	о	о	О	о	О
Other administrative staff and offices (registrar, financial aid, etc.)	0	0	0	0	0	0	0	О

EXPLORING SELF-REPORTED DATA

	Very much	Quite a bit	Some	Very little
Spending significant amounts of time studying and on academic work	0	0	0	O
Providing support to help students succeed academically	0	0	0	O
Using learning support services (tutoring services, writing center, etc.)	О	O	О	O
Encouraging contact among students from different backgrounds (social, racial/ethnic, religious, etc.)	О	0	О	О
Providing opportunities to be involved socially	О	0	О	O
Providing support for our overall well-being (recreation, health care, counseling, etc.)	О	0	О	O
Helping you manage your non- academic responsibilities (work, family, etc.)	О	О	О	О
Attending campus activities and events (performing arts, athletic events, etc.)	О	0	О	О
Attending events that address important social, economic, or political issues	О	О	О	О

How much does your institution emphasize the following?

	0	1-5	6-10	11- 15	16- 20	21- 25	26- 30	More than 30
Preparing for class (studying, reading, writing, doing homework or lab work, analyzing data, rehearsing, and other academic activities)	о	о	о	о	о	о	о	о
Participating in co- curricular activities (organizations, campus publications, student government, fraternity or sorority, intercollegiate or intramural sports, etc.)	0	0	0	0	0	0	0	О
Working for pay on campus	o	o	o	o	o	О	o	o
Working for pay off campus	o	o	ο	ο	o	О	o	o
Doing community service or volunteer work	o	o	o	o	o	О	o	О
Relaxing and socializing (time with friends, video games, TV or videos, keeping up with friends online, etc.)	о	О	о	о	о	О	О	о
Providing care for dependents (children, parents, etc.)	0	o	0	0	0	0	0	о
Commuting to campus (driving, walking, etc.)	0	0	o	o	0	ο	0	ο

About how many hours do you spend in a typical 7-day week doing the following?

Of the time you spend preparing for class in a typical 7-day week, about how much is on assigned reading?

- Very little
- O Some
- O About half
- O Most
- O Almost all

	Very much	Quite a bit	Some	Very little
Writing clearly and effectively	0	О	О	O
Speaking clearly and effectively	O	О	О	Ο
Thinking critically and analytically	O	О	О	O
Analyzing numerical and statistical information	0	0	O	С
Acquiring job- or work-related knowledge and skills	0	О	О	O
Working effectively with others	o	О	О	C
Developing or clarifying a personal code of values and ethics	•	0	О	O
Understanding people of other backgrounds (economic, racial/ethnic, political, religious, nationality, etc.)	О	О	О	O
Solving complex real-world problems	0	O	О	O
Being an informed and active citizen	O	О	О	0

How much has your experience at this institution contributed to your knowledge, skills, and personal development in the following areas?

How would you evaluate your entire educational experience at this institution?

- O Excellent
- O Good
- O Fair
- O Poor

If you could start over again, would you go to the same institution you are now attending?

- O Definitely yes
- Probably yes
- O Probably no
- O Definitely no

How many majors do you plan to complete? (Do not count minors.)

- O One
- O More than one

Please enter your major or expected major:

Second Major?

What is your class level?

- O Freshman/first-year
- O Sophomore
- O Junior
- O Senior
- O Unclassified

Thinking about this current academic term, are you a full-time student?

- O Yes
- O No

How many courses are you taking for credit this current academic term?

- **O** 0
- **O** 1
- **O** 2
- O 3
- **O** 4
- **O** 5
- **O** 6
- O 7 or more

Of these, how many are entirely online?

- **O** 0
- **O** 1
- O 2
- **O** 3
- O 4
- O 5
- O 6
- O 7 or more

What have most of your grades been up to now at this institution?

- O A
- О A-
- О B+
- ОВ
- О В-
- O C+
- **O C**
- O C- or lower

Did you begin college at this institution or elsewhere?

- O Started here
- O Started elsewhere

Since graduating from high school, which of the following types of schools have you attended other than the one you are now attending? (Select all that apply.)

- Vocational or technical school
- □ Community or junior college
- □ 4-year college or university other than this one
- None
- Other

What is the highest level of education you ever expect to complete?

- O Some college but less than a bachelor's degree
- O Bachelor's degree (B.A., B.S., etc.)
- O Master's degree (M.A., M.S., etc.)
- O Doctoral or professional degree (Ph.D., J.D., M.D., etc.)

What is the highest level of education completed by either of your parents (or those who raised you)?

- O Did not finish high school
- O High school diploma or G.E.D.
- O Attended college but did not complete degree
- O Associate's degree (A.A., A.S., etc.)
- O Bachelor's degree (B.A., B.S., etc.)
- O Master's degree (M.A., M.S., etc.)
- O Doctoral or professional degree (Ph.D., J.D., M.D., etc.)

What is your gender identity?

- O Man
- O Woman
- O Another gender identity
- **O** I prefer not to respond

Enter your year of birth (e.g., 1994):

Are you an international student or foreign national?

- O Yes
- O No

What is your racial or ethnic identification? (Select all that apply.)

- American Indian or Alaska Native
- Asian
- Black or African American
- Hispanic or Latino
- □ Native Hawaiian or Other Pacific Islander
- White
- Other
- I prefer not to respond

Are you a member of a social fraternity or sorority?

- O Yes
- O No

EXPLORING SELF-REPORTED DATA

Which of the following best describes where you are living while attending college?

- Dormitory or other campus housing (not fraternity or sorority house)
- **O** Fraternity or sorority house
- O Residence (house, apartment, etc.) within walking distance to the institution
- O Residence (house, apartment, etc.) farther than walking distance to the institution
- **O** None of the above

Are you a student-athlete on a team sponsored by your institution's athletics department?

- O Yes
- O No

Are you a current or former member of the U.S. Armed Forces, Reserves, or National Guard?

- O Yes
- O No

Have you been diagnosed with any disability or impairment?

- O Yes
- O No
- O I prefer not to respond

[Display L	ogic: If "Have	e you been o	diagnosed	with any	disability	or impairment"	' is "Yes,	" display	following
question.]									

Which of the following has been diagnosed? (Select all that apply.)

- □ A sensory impairment (vision or hearing)
- □ A mobility impairment
- □ A learning disability (e.g., ADHD, dyslexia)
- □ A mental health disorder
- □ A disability or impairment not listed above

Which of the following best describes your sexual orientation?

- O Heterosexual
- O Gay
- O Lesbian
- O Bisexual
- O Another sexual orientation
- Questioning or unsure
- O I prefer not to respond

For the second phase of data collection, would you like to receive reminders via text message?

- Yes (Please note standard text messaging and data rates will apply.)
- O No

[Display Logic: If "Text Message" is selected, display the following question.]

What is your cell phone number?

[Display Logic: If "Text Message" is selected, display the following question.]

What is your cell phone service provider?

- O AT&T
- Cricket Wireless
- O Sprint
- O T-Mobile
- O US Cellular
- Verizon
- O Other

End of Survey Thank You Notification

The following notification will appear after students successfully submit their surveys:

Thank you for completing this survey.

Your responses have been recorded. If you elected to participate in the drawing for a chance to receive a \$10 [insert local restaurant] gift card or a \$50 Amazon gift card, you have been entered.

Be on the lookout for emails inviting you to the next phase of this study to be eligible to receive an [insert local restaurant] gift card and other rewards.

Items 3 through 44 used with permission from The College Student Report, National Survey of Student Engagement, Copyright 2001-15 The Trustees of Indiana University.

Appendix C

Time-Use Diary Administered Via Email Correspondence

Initial Invitation Email

Date to be sent: Within Five Days of Completion of CSR Subject: Participate in Second Phase of [insert University name] Study to Receive a \$10 El Pelon Gift Card and for a Chance to Receive a \$50 Amazon Gift Card!

Dear [insert student first name],

You are invited to participate in the second phase of a study regarding your experiences at [insert University name].

For this second phase, you are being asked to complete five time-use diary entries. You will be asked to report how you spent your time during the previous 24-hour period using an online log. The five entries will be spread over the course of three weeks, and each entry should take you approximately 5 to 15 minutes to complete.

All participants who complete all five diary entries will receive an individualized report of how they have spent their time in an average week, and they will receive a \$10 El Pelon gift card. Additionally, all participants will be entered into a drawing for a \$50 Amazon gift card with the submission of each diary entry. An individual who submitted all five diary entries would automatically receive a \$10 El Pelon gift card and have a chance to receive up to five \$50 Amazon gift cards.

You will be sent the first link for your diary entry tomorrow, [insert date], at 9pm and be asked to log your previous 24-hours. You may want to begin to be mindful of how you spend your time beginning at 9pm on [insert date] to make the reporting process easier for you.

If you have any questions or concerns about this study, please direct them to me at <u>hottell@bc.edu</u>. Thank you for your continued participation in this study.

First Diary Submission Email

Date to be sent: According to Implementation Schedule Subject: Begin Diary Entry

Dear [insert student first name],

Please submit your first diary entry logging how you spent your time from 9pm yesterday, [insert date], until 9pm today, [insert date].

You can revisit this time-use diary as many times as you would like before submitting it. Please read the instructions available in the instrument carefully.

Follow this link to the Diary:

\${l://SurveyLink?d=Begin Diary}

Or copy and paste the URL below into your internet browser: ${l://SurveyURL}$

Follow the link to opt out of future emails: \${l://OptOutLink?d=Click here to unsubscribe}

If you have any questions or concerns about this study, please direct them to me at <u>hottell@bc.edu</u>. Thank you for your continued participation in this study.

Reminder Emails for Late Submissions

Date to be sent: 12pm the Day Following When Diary Entry was Due Subject: Don't Forget to Submit your Diary Entry to Receive your \$10 El Pelon Gift Card and have a Chance to Win a \$50 Amazon Gift Card!

Dear [insert student first name],

Don't forget to submit your diary entry from [insert day and date] to [insert day and date]. Only [insert number of entries left to complete] diary entries more to complete before you will receive your \$10 El Pelon gift card and an individualized report of how you spend your time in an average week. Also, don't forget a drawing for a \$50 Amazon gift card will be held after each diary entry submission!

You can revisit this time-use diary as many times as you would like before submitting it. Please read the instructions available in the instrument carefully.

Follow this link to the Diary:

\${l://SurveyLink?d=Begin Diary}

Or copy and paste the URL below into your internet browser: ${l://SurveyURL}$

Follow the link to opt out of future emails: \${l://OptOutLink?d=Click here to unsubscribe}

If you have any questions or concerns about this study, please direct them to me at <u>hottell@bc.edu</u>. Thank you for your continued participation in this study.

Subsequent Reminder of Pending Diary Entry Emails

Date to be sent: According to Implementation Schedule Subject: Your Next Diary Entry Will be Sent Tomorrow, [insert date]

Dear [insert student first name],

You will be sent the link to your [second/third/fourth/final] diary entry tomorrow, [insert date], at 9pm and be asked to log your previous 24-hours. You may want to begin to be mindful of how you spend your time beginning at 9pm on [insert date] to make the reporting process easier for you.

You only have [insert number of entries left to complete] diary entries more to complete before you will receive your \$10 El Pelon gift card and an individualized report of how you spend your time in an average week. Also, don't forget a drawing for a \$50 Amazon gift card will be held after each diary entry submission!

If you have any questions or concerns about this study, please direct them to me at <u>hottell@bc.edu</u>. Thank you for your continued participation in this study.

Subsequent Emails to Submit Diary Entries

Date to be sent: According to Implementation Schedule Subject: Keep Completing Your Diary Entries to Receive Your \$10 El Pelon Gift Card and for a Chance to Win a \$50 Amazon Gift Card!

Dear [insert student first name],

You only have [insert number of entries left to complete] diary entries more to complete before you will receive your \$10 El Pelon gift card and an individualized report of how you spend your time in an average week. Also, don't forget a drawing for a \$50 Amazon gift card will be held after each diary entry submission!

Submit your diary entry for [insert date] by following the below link. You can revisit this timeuse diary as many times as you would like before submitting it. Please read the instructions available in the instrument carefully.

Follow this link to the Diary:

\${l://SurveyLink?d=Begin Diary}

Or copy and paste the URL below into your internet browser: ${l://SurveyURL}$

Follow the link to opt out of future emails: \${l://OptOutLink?d=Click here to unsubscribe}

If you have any questions or concerns about this study, please direct them to me at <u>hottell@bc.edu</u>. Thank you for your continued participation in this study.

Appendix D

Time Use Diary Instrument Administered Via Email

Informed Consent for Taking Part as a Subject in a Research Study titled "The Story of Who I Am: Exploring Self-Reported Data in Higher Education as an Artifact of Socio-environmentally Influenced Behavior"

Introduction:

You are being asked to participate in the second phase of a research study titled "The Story of Who I Am: Exploring Self-Reported Data in Higher Education as an Artifact of Socio-environmentally Influenced Behavior." You were selected to participate in this project because you are a first-year student enrolled in a highly selective four-year higher education institution. We ask that you read this form and ask any questions that you may have before agreeing to be in the study.

Purpose of the Study:

The purpose of this study is to better understand how students' responses on self-reported surveys may be influenced by their experiences of their campus environments, as a function of their multifaceted identities. People who take part in this study will include about 1,000 first-year college students at BC from different majors.

Description of Study Procedures:

This study will be conducted in three phases. You have already completed the first phase of data collection, and you are now being invited to participate in the second phase of data collection.

The second phase of data collection will be conducted through the completion of five time-use diaries over the span of three weeks, and each diary entry will take the participant approximately 10 minutes to complete.

For the final phase of data collection, participants will be purposefully selected based upon their initial responses in phase one and phase two. Those individuals who choose to participate after being invited will be asked to complete a one-on-one, in-person interview, which will take approximately one hour to complete.

Risks to Being in Study:

There are no expected risks of participating in this study. There may be risks unknown at this time.

Benefits of Being in Study:

You will receive a report of how you spend your time in a typical week. All the students will receive this benefit if they persist in the study.

Compensation:

Individuals who fully participate in phase two of data collection by submitting all five diary entries will receive a \$10 gift card to El Pelon, and for each diary entry submitted, an individual will be entered into a drawing to win a \$50 Amazon gift card. Finally, those individuals who participate in the final phase of data collection will receive a \$10 Amazon gift card. There are no costs to you associated with your participation.

Keeping Things Private:

This Principal Investigator will exert all reasonable efforts to keep your responses and your identity confidential. The online survey and time-use diaries will be administered through Qualtrics, which is password protected; all hard copies of data will be scrubbed of individually identifying information and will be kept in a locked file cabinet, and recordings of individual interviews and the associated transcripts will be anonymously labeled and stored electronically in a password protected drive. Please note that regulatory agencies, the Boston College Institutional Review Board, and Boston College internal auditors may review research records.

Voluntary Participation/Withdrawal:

Your participation is voluntary. If you choose not to participate it will not affect your relations with Boston College. You are free to withdraw or skip questions for any reason. There are no penalties for withdrawing or skipping questions. If you wish to opt-out of the study, a link to do so is provided in all email correspondences.

Contacts and Questions:

If you have questions or concerns concerning this research you may contact the Principal Investigator, Derek Hottell, at 617-552-3470 or hottell@bc.edu or the Dissertation Adviser, Dr. Heather Rowan-Kenyon, at 617-552-4797 or heather.rowan-kenyon@bc.edu. If you have questions about your rights as a research participant, you may contact the Office for Research Protections, Boston College, at 617-552-4778 or <u>irb@bc.edu</u>.

Copy of Consent Form:

You will be given a copy of this form to keep for your records and future reference.

Statement of Consent:

I have read (or have had read to me) the contents of this consent form and have been encouraged to ask questions. I have received answers to my questions. I give my consent to take part in this study. I have received (or will receive) a copy of this form.

Signature/Dates:

I consent to participate in this study.

Consent Given

Instructions: You are being asked to keep a log of how you spend your time beginning at 9pm on [insert day and date] and ending at 9pm on [insert day and date]. For the beginning block of each activity, provide a description of the activity (e.g., running, studying with friends, etc.), the secondary activity (i.e., anything else you might have been doing at the same time as the primary activity), and the location (e.g., on-campus or off-campus).

Any changes you make to your diary will be automatically saved, so you can enter changes throughout the course of the day. To make any updates or changes to your diary, just click the diary link previously emailed to you for this diary entry to reopen it. DO NOT click submit, until you are finished with your diary. You will not be able to make changes once it is submitted.

For any block of time in which you do not change activity, simply leave these blocks blank. Be as specific as possible in the description of your activities. The following are some examples:

- Preparing for class
- Participating in club activities
- Working for pay on campus
- Working for pay off campus
- Community service
- Volunteer work
- Relaxing with friends
- Watching little brother
- Riding T to campus
- Riding Newton Bus
- Meeting with Professor
- Meeting for Rugby Club

EXPLORING SELF-REPORTED DATA

Here is a short example of a time-use diary completed correctly:

	What were you doing? (e.g., running, studying, eating, dressing, etc.)	Were you doing anything else at the same time as this activity?	Were you on-campus or off-campus?
	Activity	Secondary Activity	
9:00pm	Studying for Midterm	Watching TV	On-Campus 🔻
9:30pm			•
10:00pm	Intramural Basketbal	None	On-Campus ▼
10:30pm			•
11:00pm	Snack at Late Night	Talking with Friends	On-Campus 🔻
11:30pm			
12:00am (Midnight)	Sleeping	None	On-Campus ▼
12:30am			
1:00am			
1:30am			•
	Activity	Secondary Activity	
2:00am			T
2:30am			•
3:00am			
3:30am			
4:00am			· · · · · ·
4:30am			
5:00am	Workout at Plex	Nothing	On-Campus 🔻

Beginning at 9pm on [insert day and date], describe in chronological order how you spent your time until 9pm on [insert day and date].

If your activity does not change, leave the row blank. Click submit once you have accounted for all of your previous 24 hours. Any changes you make will be saved automatically, so you can revisit this diary as many times as you would like to make updates until you submit it.

	What were you doing? (e.g., running, studying, eating, dressing, etc.)	Were you doing anything else at the same time as this activity?	Were you on-campus or off-campus?		
	Activity	Secondary Activity	On-Campus	Off-Campus	
9:00pm			Ο	Ο	
9:30pm			Ο	Ο	
10:00pm			Ο	Ο	
10:30pm			Ο	Ο	
11:00pm			Ο	Ο	
11:30pm			Ο	Ο	
12:00am (Midnight)			О	О	
12:30am			Ο	Ο	
1:00am			Ο	Ο	
1:30am			Ο	Ο	
2:00am			Ο	Ο	
2:30am			Ο	Ο	
3:00am			Ο	Ο	
3:30am			Ο	Ο	
4:00am			Ο	О	
4:30am			Ο	Ο	
5:00am			О	О	
5:30am			О	О	
6:00am			О	О	
6:30am			О	О	
7:00am			Ο	О	
7:30am			Ο	О	
8:00am			Ο	О	
8:30am			Ο	О	
9:00am			О	О	
9:30am			О	О	
10:00am			О	О	
10:30am			О	О	
11:00am			Ο	Ο	
11:30am			O	O	
12:00pm (Noon)			O	Ο	
12:30pm			Ο	Ο	
1:00pm			Ο	Ο	
1:30pm			Ο	O	

2:00pm	O	O
2:30pm	0	O
3:00pm	0	O
3:30pm	0	O
4:00pm	0	O
4:30pm	0	O
5:00pm	0	O
5:30pm	O	O
6:00pm	0	O
6:30pm	0	O
7:00pm	0	O
7:30pm	0	O
8:00pm	0	O
8:30pm	0	O

Are you sure you are ready to submit your diary? You will not be able to make any additional changes after you submit it.

- O Yes
- O No Do not click submit. Click Previous Page.

End of Diary Thank You Notification

The following notification will appear after students successfully submit their diaries:

Thank you for completing your [first/second/third/fourth] diary entry.

Your responses have been recorded. You have been entered into the drawing to win a \$50 Amazon gift card!

You will submit your next diary entry on [insert date].

Keep submitting your diary entries to receive your \$10 El [insert local restaurant] and to have more chances to win a \$50 Amazon gift card!

Final End of Diary Thank You Notification

The following notification will appear after students successfully submit their diaries:

Thank you for completing your final diary entry!

Your responses have been recorded, and if you submitted all five diary entries, you will receive your \$10 El Pelon gift card and your individualized time-usage report via email! Additionally, you will be entered into the drawing to win a \$50 Amazon gift card.

Be on the lookout for email invitations to the final phase of the study. All individuals who participate in the final phase will receive a \$10 Amazon gift card!

Appendix E

SMS Reminders for Time Use Diary Entries

SMS Reminder of Pending Diary Entry Emails

Date: 9pm the Day Prior to When Diary Entry is Due You will be sent your [first/second/third/fourth/final] diary entry tomorrow, [insert date], at 9pm. Submit your next entry for another chance to win a \$50 Amazon gift card. Submit all five to receive your \$10 El Pelon gift card.

SMS Reminder to Submit Diary

Date: 9pm the Day Diary Entry is Due

Check your email. You have your [first/second/third/fourth/final] diary entry to submit for a chance to win a \$50 Amazon gift card. Submit all five to receive your \$10 El Pelon gift card!

SMS Reminders to Submit Diary for Late Entries

Date: 12pm the Day Following When Diary Entry was Due Don't forget to submit your [First/Second/Third/Fourth/Final] diary for a chance to win a \$50 Amazon gift card. Submit all five to receive your \$10 El Pelon gift card. Check your email for the diary link.

Appendix F

Email Invitation to Individual Interviews

Date to be sent: Wednesday, April 8, 2015 Subject: Receive a \$10 Amazon gift card for Participating in Final Phase of [insert University name] Study

Dear [insert student first name],

You are invited to participate in the final phase of the time-use study at [insert University name] in which you have previously participated.

This final phase will consist of a one-hour, semi-structured individual interview. At the beginning of the interview you will be provided with an informed consent for your review.

All individuals who choose to participate in this phase of data collection will automatically receive a \$10 Amazon gift card. If you are interested in participating, please select an available interview slot by using the below link to a Doodle poll.

[insert link to doodle poll]

If you have any questions or concerns about this study, please direct them to me at <u>hottell@bc.edu</u>. Thank you in advance for your participation.

Appendix G

Semi-Structured Individual Interview Informed Consent



Boston College Lynch School of Education Informed Consent to be in study:

The Story of Who I Am:

Exploring Self-Reported Data in Higher Education as an Artifact of Socio-environmentally

Influenced Behavior

Researchers: Derek Hottell

Type of consent: Adult Consent Form

Introduction

- You are being asked to be in a research study of how students respond on self-reported surveys.
- You were selected to be in the study because you are a first-year student at a highly selective, private four-year higher education institution.
- Please read this form. Ask any questions that you may have before you agree to be in the study.

Purpose of Study:

- The purpose of this study is to explore how students' previous experiences and personal identities may influence how they respond on self-reported surveys.
- The total number of people in this study is expected to be 1,000.

What will happen in the study:

• If you agree to be in this phase of the study, we would ask you to participate in one semistructured individual interview.

Risks and Discomforts of Being in the Study:

• There are no expected risks. This study may include risks that are unknown at this time.

Benefits of Being in the Study:

- The purpose of the study is to gain a fuller understanding of how students respond on surveys, so university administrators are better equipped to know how to apply and use such data.
- The benefits of being in this phase of the study include a \$10 Amazon gift card for all individuals participating.

Payments:

• You will receive the following payment for being in the study: one \$10 Amazon gift card.

Costs:

• There is no cost to you to be in this research study.

Confidentiality:

- The records of this study will be kept private. In any sort of report we may publish, we will not include any information that will make it possible to identify you. Research records will be kept in a locked file.
- All electronic information will be coded and secured using a password-protected file. The audio recordings of the interviews will be shared with a third-party contractor for transcription, but no identifiable student information will be included with the files. Additionally, the dissertation committee will have access to the audio files. The files will be destroyed one year after the completion of the study.
- Mainly just the researchers will have access to information; however, please note that a few other key people may also have access. These might include government agencies. Also, the Institutional Review Board at Boston College and internal Boston College auditors may review the research records.

Choosing to be in the study and choosing to quit the study:

- Choosing to be in this study is voluntary. If you choose not to be in this study, it will not affect your current or future relations with the University.
- You are free to quit at any time, for whatever reason.
- There is no penalty or loss of benefits for not taking part or for quitting. Additionally, you do not jeopardize grades nor risk loss of present or future faculty/school/University relationships.
- During the research process, you will be notified of any new findings from the research that may make you decide that you want to stop being in the study.

Getting Dismissed from the study:

• The researcher may dismiss you from the study at any time for the following reasons: (1) it is in your best interests (e.g. side effects or distress have resulted), (2) you have failed to comply with the study rules, or (3) the study sponsor decides to end the study.

Care and payment for Injury:

• If you experience an emergency medical problem or injury as a direct result of being in this study, you will receive care from [*insert name or facility, etc.*]. [*Insert statement as to how care will be paid for.*] Decisions about care and payment for any other research related injury will be made on a case-by-case basis.

Contacts and Questions:

- The researchers conducting this study are Derek Hottell and Dr. Heather Rowan-Kenyon. For questions or more information concerning this research you may contact Derek Hottell at <u>hottell@bc.edu</u> or Dr. Heather Rowan-Kenyon at <u>heather.rowan-kenyon@bc.edu</u>.
- If you believe you may have suffered a research related injury, contact Derek Hottell at 617-552-3470 who will give you further instructions.
- If you have any questions about your rights as a person in this research study, you may contact: Director, Office for Research Protections, Boston College at (617) 552-4778, or irb@bc.edu

Copy of Consent Form:

• You will be given a copy of this form to keep for your records and future reference.

Statement of Consent:

• I have read (or have had read to me) the contents of this consent form. I have been encouraged to ask questions. I have received answers to my questions. I give my consent to be in this study. I have received (or will receive) a copy of this form.

Signatures/Dates

•	For Adult or Subject's Legal Representative or older child consent (Full For	<u>rm):</u>	
	Study Participant (Print Name) :	Date	
	Participant or Legal Representative Signature :	Date	

Appendix H

Semi-Structured Individual Interview Protocol

The goal of this interview is to better understand how students experience their campus environments, how their individual identities may shape this experience, and how the interplay of individual and environment may influence responses on the CSR. Students will be presented with their CSR for their review and specific questions of interest will be highlighted.

Objective:

- How did students formulate their responses on the CSR?
- How do they perceive their environment?
- What have their experiences on campus been thus far?
- What memories and/or information informed their responses?
- What concerns did they have about responding?

INTERVIEW AGENDA

- Welcome Introductions
- Review agenda and purpose of interview
- Have student sign another consent form and say:
 - "This interview is voluntary—you do not have to take part if you do not want to. If you find any questions uncomfortable, it's OK not to answer them. You can leave the interview at any time. Your privacy has been and will continue to be protected. We will not use your real name in any report or published research. The interview is kept confidential."
- Identify use of recorder
- Interview Questions
- Wrap up.

BACKGROUND INFORMATION

- 1) To start out, I would like to know about how things have gone so far this year.
 - a. What are you proud of so far this school year?
 - b. What have your struggles been?
- 2) What has been your experience outside of the classroom so far this year?
 - a. Have you become involved in any clubs? If so, what types?
- 3) How easy has it been for you to make friends on campus?
 - a. How did you make these friends?
 - b. What types of things do you do with your friends?

- 4) What did you expect from college?
 - a. How has Boston College met or not met those expectations?
- 5) How do you think your high school experiences compared to your experiences at Boston College?
 - a. How do you think your experiences from home compared?
- 6) How would you describe yourself as a student?
 - a. What does it mean to be a "good" (whatever terminology they use) student? How do you know this?

COMMUNITY TIES

- 7) Do you feel like you are a part of the BC community? Why or why not?
 - a. Smaller communities on campus?
 - i. [E.g. Latino student groups, etc.]
- 8) How has BC supported you? Challenged you?

RETROSPECTIVE COGNITIVE INTERVIEWING

- **9)** Please take a moment to review your responses on the CSR [specifically provide them with the behavioral frequency section].
 - a. When considering how many hours you spent preparing for class, what type of information did you include?
 - i. What does preparing for class mean?
 - b. What type of activities did you include when considering your co-curricular activities?
 - c. What type of activities did you include when considering hours spent working for pay?
 - d. What does on campus mean? Off campus?
 - e. What type of activities did you include when considering community service or volunteerism?
 - f. What type of activities did you include when considering how much time you spent relaxing and socializing?
 - g. What type of activities did you include when considering time spent caring for dependents?

- h. What type of activities did you include when considering your average commute?
- 10) How do you think your responses compare to your friends? Other BC students?
- 11) What is a typical 7-day period?
- **12)** If you were completing this instrument today, how, if at all, would your responses change?
- **13)** Review specific questions from CSR using vague quantifiers. What does often mean to you?
 - a. Very Often?
 - b. Sometimes?
 - c. Occasionally?
- 14) When responding to these questions, what information did you use?
- **15)** Do you have anything else you would like to share about your experiences thus far at Boston College or about your experience taking the CSR?

References

Agresti, A., (2013). Categorical Data Analysis (3rd ed.). Hoboken, NJ: John Wiley & Sons, Inc.

- Allen, I. H., & Lester, S. M. (2012). The impact of a college survival skills course and a success coach on retention and academic performance. *Journal of Career and Technical Education*, 27(1), 8-14.
- Arnold, K. D., Lu, E. C., Armstrong, K. J. (2012). The ecology of college readiness. ASHE Higher Education Report, 38(5), 1-138.
- Astin, A. W. (2001). *What matters in college?: Four critical years revisited*. San Francisco, CA: Jossey-Bass.
- Astin, A. W. (1984). Student involvement: A developmental theory for higher education. *Journal* of College Student Personnel, 25, 297-308.
- Baez, B. (2013). *Affirmative action, hate speech, and tenure: Narratives about race and law in the academy.* New York, NY: Routledge.
- Banta, T. W., Pike, G. R., & Hansen, M. J. (2009). The use of engagement in institutional planning, assessment, and accreditation. In R. M. Gonyea and G. D. Kuh (Eds.), Using NSSE in institutional research. New Directions for Institutional Research, 141, 21-34.
- Belli, R. F., Alwin, D. F., & Stafford, F. P. (2009). The application of calendar and time diary methods in the collection of life course data. In R. F. Belli, F. P. Stafford, & D. F. Alwin (Eds.), *Calendar and Time Diary: Methods in Life Course Research*, (pp. 243 256). Thousand Oaks, CA: Sage.

Beniger, J. R. (1983). Comments. The Public Opinion Quarterly, 47(4), 479-489.

Berger, J. B. & Milem, J. F. (1999). The role of student involvement and perceptions of integration in a causal model of student persistence. *Research in Higher Education*,

40(6), 641-664. Retrieved from http://www.jstor.org/stable/40196897

- Bolger, N., Davis, A., & Rafaeli, E. (2003). Diary methods: Capturing life as it is lived. *Annual Review of Psychology, 54*, 579 – 616.
- Bowman, N. (2010). Can 1st-year college students accurately report their learning and development?. *American Educational Research Journal*, 47(2), 466 496.
 Doi:10.3102/00028312093595
- Bourdieu, P., & Passeron, J. C. (1990). *Reproduction in education, society, and culture*. (R. Nice, Trans.). London, UK: Sage Publications. (Original work published 1977)
- Bowling, A. (2005). Mode of questionnaire administration can have serious effects on data quality. *Journal of Public Health*, *27*(3), 281-291.
- Brenner, P. (2012). Investigating the effect of bias in survey measures of church attendance. Sociology of Religion: A Quarterly Review, 74(1), 361-383. doi:10.1093/socrel/srs042
- Brenner, P. S., & DeLamater, J. D. (2013). Social desirability bias in self-reports of physical activity: Is an exercise identity the culprit?. *Social Indicators Research*, *117*(2), 489-504.
- Bronfenbrenner, U. (1993). The ecology of cognitive development: Research models and fugitive findings. In R. H. Wozniak & K. W. Fischer (Eds.), *Development in context: Acting and thinking in specific environments* (pp. 3-44). Hillsdale, NJ: Erlbaum.
- Bronfenbrenner, U. (2005). *Making human beings human: Bioecological perspectives on human development*. Thousand Oaks, CA: Sage Publications.
- Butz, D., & Besio, K. (2010). The value of autoethnography for field research in transcultural settings. *The Professional Geographer*, 56(3), 350-360. doi:10.1111/j.0033-0124.2004.05603004.x

Campbell, C. M., & Cabrera, A. F. (2011). How sound is NSSE?: Investigating the psychometric

properties of NSSE at a public, research-extensive institution. *The Review of Higher Education*, *35*(1), 76-103.

- Chou, R. S., & Feagin, J. R. (2015). *Myth of the model minority: Asian Americans facing racism* (2nd ed.). New York, NY: Routledge.
- Chronicle of Higher Education. (2014). Almanac of higher education 2014: Published and Net Tuition Fees, by Sector, 1993-94 to 2013-14. Retrieved from http://chronicle.com/article/PublishedNet-Tuition/147513/
- Cohen, J. W. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Collins, K. M. T., Onwuegbuzie, A. J., & Sutton, I. L. (2006). A model incorporating the rationale and purpose for conducting mixed methods research in special education and beyond. *Learning Disabilities: A Contemporary Journal*, *4*, 67-100.
- Converse, J. M. (1987). *Survey research in the United States: Root and emergency 1890 1960.* Berkeley, CA: University of California Press.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Thousand Oaks, CA: Sage Publications.
- Creswell, J. W., & Plano Clark, V. L. (2007). *Designing and conducting mixed methods research*. Thousand Oaks, CA: Sage.
- Creswell, J. W., Plano Clark, V. L., Gutmann, M. L., & Hanson, W. E. (2008). Advanced mixed methods research designs. In V. L. Plano Clark & J. W. Creswell (Eds.), *The Mixed Methods Reader*, pp. 161-198. Thousand Oaks, CA: Sage. (Original work published 2003)

- Czikszentmihalyi, M. (2008). *Flow: The psychology of optimal experience*. New York, NY: Harper Perennial.
- Danns, D., & Purdy, M. A. (2015). Introduction: Historical perspectives on African American education, civil rights, and black power. *The Journal of African American History*, 100(4), 573-585.
- Davis, B., & Sumara, D. J. (2005). Challenging images of knowing: Complexity science in educational research. *International Journal of Qualitative Studies in Education*, 18(3), 305-321.
- Desrosieres, A. (1998). *The politics of large numbers: A history of statistical reasoning*. (C. Naish, Trans.). Cambridge, MA: Harvard University Press. (Original work published 1993)
- Fichman, M., & Cummings, J. M. (2003). Multiple imputation for missing data: Making the most of what you know. Organizational Research Methods, 6(3), 282-308.
- Fletcher, J. M., & Tienda, M. (2014). High school quality and race differences in college achievement. In R. Bangs & L. E. Davis (Eds.), *Race and social problems: Restructuring inequality* (pp. 137-159). New York, NY: Springer.
- Fowler, Jr., F. J. (1995). *Improving survey questions: Design and evaluation*. Thousand Oaks,CA: Sage Publications.
- Fowler, Jr., F. J. (2009). *Survey research methods*, (4th ed.). Thousand Oaks, CA: Sage. doi: http://dx/doi.org/10.4135/9781452230184
- Garry, M. Sharman, S. J., Feldman, J., Marlatt, G. A., & Loftus, E. F. (2002). Examining memory for heterosexual college students' sexual experiences using an electronic mail diary. *Health Psychology*, 21(6), 629-634.
- Gonyea, R. M. (2005). Self-reported data in institutional research: Review and recommendations. In P. D. Umbach (Ed.), *Survey Research: Emerging Issues* (pp. 73-90). San Francisco: Wiley Periodicals.
- Graham, J. W. (2009). Missing data analysis: Making it work in the real world. *Annual Review of Psychology*, *60*, 549-576.

Graham, J. W. (2012). Missing Data: Analysis and Design. New York, NY: Springer.

- Graham, J. W., & Schaffer, J. L., (1999). On the performance of mulitiple imputation for multivariate data with small sample size. In R. Hoyle (Ed.), *Statistical Strategies for Small Sample Research* (pp. 1-29). Thousand Oaks, CA: Sage.
- Grant, A. J., & Zeeman, L. (2012). Whose story is it?: An autoethnography concerning narrative identity. *The Qualitative Report*, 17(36), 1-12. Retrieved from http://search.proquest.com/docview/1504065784?accountid=9673
- Green, J. C., Caracelli, V. J., & Graham, W. F. (1989). Toward a conceptual framework for mixed-method evaluation designs. *Educational Evaluation and Policy Analysis*, 11(3), 255-274.
- Groves, R. M., Fowler, F. J., Couper, M. P., Lepkowski, J. M., Singer, E., & Tourangeau, R. (2009). *Survey methodology* (2nd ed.). Hoboken, NJ: Wiley.
- Guardia, J. R., & Evans, N. J. (2008). Factors influencing the ethnic identity development of Latino fraternity members at a Hispanic serving institution. *Journal of College Student Development*, 49(3), 163-181.
- Guba, E. G., & Lincoln, Y. S. (2011). Paradigmatic controversies, contradictions, and emerging confluences. In N. K. Denzin & Y. S. Lincoln (Eds.), *The Sage Handbook of Qualitative Research*, (4th ed., pp. 97-128). Thousand Oaks, CA: Sage.

- Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, *18*(1), 59-82
- Harrell, Jr., F. E. (2001). Regression modeling strategies with applications to linear models, logistic regression, and survival analysis. New York, NY: Springer.
- Harvey, A. S. (1993). Guidelines for time use collection. Social Indicators Research, 30(2), 197. Retrieved from http://search.proquest.com/docview/1308071337?accountid=9673
- Hausman, J. (2012). Contingent valuation: From dubious to hopeless. *The Journal of Economic Perspectives, 26*(4), 43-56.
- Horton, N., & Kleinman, K. (2007). Much ado about nothing: A comparison of missing data and software. *The American Statistician*, *61*(1), 79-90.
- Hosmer, D. W., Lemeshow, S., & Sturdivant, R. X. (2013). Wiley Series in Probability and Statistics : Applied Logistic Regression (3rd ed.). New York, NY, USA: John Wiley & Sons. Retrieved from http://www.ebrary.com on January 6, 2015.
- Hughes, R., & Pace, C. R. (2003). Using NSSE to study student retention and withdrawal. *Assessment Update*, 15(4), 1-2, 15.
- Johnson, R. B., Onwuegbuzie, A. J., & Turner, L. A. (2007). Toward a definition of mixed methods research. *Journal of Mixed Methods Research*, *1*(2), 112-133.
- Karabel, J. (2005). *The chosen: The hidden history of admission and exclusion at Harvard, Yale, and Princeton.* Boston, MA: Houghton Mifflin.
- Kinzie, J., & Pennipede, B. S. (2009). Converting engagement results into action. In R. M.
 Gonyea & G. D. Kuh (Eds.), Using NSSE in institutional research. New Directions for Institutional Research, 141. San Francisco, CA: Jossey-Bass.

Kuh, G. D. (2008). High-impact educational practices: What they are, who has access to them,

and why they matter. Washington, DC: Association of American Colleges and Universities.

- Kuh, G. D. (2009a). What student affairs professional need to know about student engagement. *Journal of College Student Development, 50*(6), 683-706. doi: 10.1353/csd.0.0099
- Kuh, G. D. (2009b). The national survey of student engagement: Conceptual and empirical foundations. In R. M. Gonyea & G. D. Kuh (Eds.), *New Directions for Institutional Research*, 141, 5-20. Hoboken, NJ: Wiley Periodicals.
- Kuh, G. D., Cruce, T. M., Shoup, R., Kinzie, J., & Gonyea, R. M. (2008). Unmasking the effects of student engagement on first-year college grades and persistence. *Journal of Higher Education*, 79(5), 540-563.
- Kuh, G. D., Kinzie, J., Cruce, T., Shoup, R., & Gonyea, R. (2006). Connecting the dots: Multifaceted analysis of the relationships between student engagement results from the NSSE and the institutional policies and conditions that foster student success. Final report to Lumina Foundation for Education. Bloomington, IN: Indiana University Center for Postsecondary Research.
- Kuh, G. D., Kinzie, J., Schuh, J. H., Whitt, E. J., & Associates. (2005). Student success in college: Creating conditions that matter. San Francisco, CA: Jossey-Bass.
- Lee, S. J. (2015). Unraveling the "model minority" stereotype: Listening to Asian American youth (2nd ed.). New York, NY: Teachers College Press.
- Little, R. (1998). A test of missing completely at random for multivariate data with missing values. *Journal of the American Statistical Association*, *83*(404), 1198-1201.
- Lusinchi, D. (2012). "President" Landon and the 1936 "Literary Digest" poll: Were automobile and telephone owners to blame?. *Social Science History*, *36*(1), 23 54.

- Marshall, C., & Rossman, G. B. (2011). *Designing qualitative research*, (5th ed.). Thousand Oaks, CA: Sage.
- Miller, A. (2011). *Investigating social desirability bias in student self-report surveys*. Paper presented at the Annual Forum of the Association for Institutional Research.
- McCormick, A. C., Gonyea, R. M., & Kinzie, J. (2013a). Student engagement: Bridging research and practice to improve the quality of undergraduate education. In M. B. Paulsen (Ed.), *Higher education: Handbook of theory and research* (Vol. 28, pp. 47-92). New York, NY: Springer.
- McCormick, A. C., Gonyea, R. M., & Kinzie, J. (2013b). Refreshing engagement: NSSE at 13. *Change: The Magazine of Higher Learning*, 45(3), 6-15.
 doi:10.1080/00091383.2013.786985
- McCormick, A. C., & McClenney, K. (2012). Will these trees ever bear fruit?: A response to the special issue on student engagement. *The Review of Higher Education*, *35*(2), 307-333.
- Morgan, D. L. (2008). Paradigms lost and pragmatism regained. In V. L. Plano Clark & J. W.
 Creswell (Eds.), *The Mixed Methods Reader*, pp. 27-65. Thousand Oaks, CA: Sage.
 (Original work published 2007)
- Museus, S. (2014). The culturally engaging campus environments (CECE) model: A new theory of success among racially diverse college student populations. In M. B. Paulsen (Ed.), *Higher education: Handbook of theory and research, Vol. 29* (pp. 189-227). Dordrecht, NY: Springer.
- Myers, T.A. (2011). Goodbye, listwise deletion: Presenting hot deck imputation as an easy and effective tool for handling missing data. *Communication Methods and Measures, 5*(4), 291-310.

The National Center for Public Policy and Higher Education. (2008). *Measuring up 2008: The national report card on higher education*. Retrieved from http://measuringup2008.highereducation.org/index.php

National Survey of Student Engagement. (2003). *Converting data into action: Expanding the boundaries of institutional improvement*. Bloomington, IN: Indiana University Center for Postsecondary Research.

- National Survey of Student Engagement. (2005). *National survey of student engagement 2005*. Retrieved from www.nsse.iub.edu on September 1, 2012.
- National Survey of Student Engagement. (2009). *NSSE timeline: 1998 2009*. Retrieved from www.nsse.iub.edu on December 11, 2012.
- National Survey of Student Engagement. (2010a). *Predictive Validity: Connecting the Dots: Is there a link between student engagement and academic success?*. Retrieved from http://nsse.iub.edu/pdf/psychometric_portfolio/Validity_ConnectingTheDots.pdf on November 15, 2014.
- National Survey of Student Engagement. (2010b). Factor analysis: 2009 internal structure for deep learning. Retrieved from

http://nsse.iub.edu/pdf/psychometric_portfolio/Validity_DeepLearning.pdf on November 15, 2014.

- National Survey of Student Engagement. (2012a) *About NSSE*. Retrieved from www.nsse.iub.edu on December 11, 2012.
- National Survey of Student Engagement. (2012b). *Our origins and potential*. Retrieved from www.nsse.iub.edu on December 11, 2012.

National Survey of Student Engagement. (2012c). Validity: BCSSE-NSSE Relationships.

Retrieved from http://nsse.iub.edu/pdf/psychometric_portfolio/Validity_BCSSE-NSSE%20Relationships.pdf on November 15, 2014.

National Survey of Student Engagement. (2013). *The College Student Report*. Retrieved from http://nsse.iub.edu/pdf/survey_instruments/2014/NSSE%202014%20-

%20US%20English.pdf on December 15, 2014.

- National Survey of Student Engagement. (2014a). *About NSSE*. Retrieved from www.nsse.iub.edu on April 18, 2014.
- National Survey of Student Engagement. (2014b). *Public reporting of student engagement results*. Retrieved from www.nsse.iub.edu on April 18, 2014.
- National Survey of Student Engagement. (2014c). *NSSE 2014 Engagement Indicators: Internal Consistency Statistics by Class Level*. Retrieved from http://nsse.iub.edu/2014_institutional_report/pdf/EI%20Intercorrelations%202014.pdf on November 15, 2014.
- National Survey of Student Engagement. (2014d). NSSE 2014 U.S. response rates by institutional characteristics. Retrieved from

http://nsse.iub.edu/2014_institutional_report/pdf/NSSE%202014%20Response%20Rate %20Summary%20table.pdf on November 16, 2014.

- National Survey of Student Engagement. (2014e). *Engagement Indicators*. Retrieved from http://nsse.iub.edu/html/engagement_indicators.cfm on November 15, 2014.
- National Survey of Student Engagement. (2015). *NSSE 2015 Codebook: U.S. Version*. Retrieved from http://nsse.indiana.edu/2015_Institutional_Report/data_codebooks/ NSSE%202015%20Codebook.pdf on February 21, 2016.

- National Survey of Student Engagement (2016). Computing Engagement Indicators, Updated NSSE (since 2013). Retrieved from http://nsse.indiana.edu/html/computingEIs.cfm on March 6, 2016.
- Obama, B. (2014). State of the Union Address. Retrieved from http://www.whitehouse.gov/thepress-office/2014/01/28/president-barack-obamas-state-union-address on April 18, 2014.
- Olivas, M. A. (2011). If you build it, they will assess it (or, an open letter to George Kuh, with love and respect). *The Review of Higher Education*, *35*(1), 1-15.
- Pace, C. R. (1984). Measuring the Quality of College Student Experiences: An Account of the Development and Use of the College Student Experiences Questionnaire. Los Angeles, CA: UCLA Higher Education Research Institute.
- Pace, C. R. (1998). Recollections and reflections. In J. C. Smart (Ed.), *Higher education: Handbook of theory and research* (Vol. 13, pp. 1-34). New York, NY: Agathon.
- Pace, C. R., & Friedlander, J. (1982). The meaning of response categories: How often is
 "occasionally," "often," and "very often"?. *Research in Higher Education*, 17(3), 267-281.
- Palinkas, L. A., Horwitz, S. M., Green, C. A., Wisdom, J. P., Duan, N., & Hoagwood, K. (2013).
 Purposeful sampling for qualitative data collection and analysis in mixed method
 implementation research. *Administration and Policy in Mental Health and Mental Health Services Research*, 1-12.

Pallant, J. (2013). SPSS Survival Manual (5th ed.) New York, NY: McGraw Hill.

Pascarella, E. T., Seifert, T. A., & Blaich, C. (2010). How effective are the NSSE benchmarks in predicting important educational outcomes?. *Change: The Magazine of Higher Learning,*

42(1), 16-22. Retrieved from

http://search.proquest.com.proxy.bc.edu/docview/61798933?accountid=9673

- Pascarella, E. T., & Terenzini, P. T. (2005). *How college affects students* (Vol. 2). San Francisco, CA: Jossey-Bass.
- Pike, G. R. (1999). The constant error of the halo in educational outcomes research. Research in Higher Education, 40, 61–86.
- Pike, G. R., & Kuh, G. D. (2005). First- and second-generation college students: A comparison of their engagement and intellectual development. *Journal of Higher Education*, 76(3), 276.
- Pike, G. R., Kuh, G. D., & McCormick, A. C. (2011). An investigation of the contingent relationships between learning community participation and student engagement. *Research in Higher Education*, 52(3), 300 – 322. doi:10.1007/s11162-010-9192-1
- Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Padsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879-903.
- Porter, S. R. (2011). Do college student surveys have any validity?. *The Review of Higher Education*, 35(1), 1-15. 45-76.
- Puma, M., Olsen, R., Bell, S., & Price, C. (2009). What to do when data are missing in group randomized controlled trials. Washington, D.C.: Institute of Education Sciences, National Center for Educational Evaluation and Regional Assistance.
- Randles, R. H. (1988). Wilcoxon signed rank test. *Encyclopedia of statistical sciences*.
- Renn, K. A. (2003). Understanding the identities of mixed race college students through a developmental ecology lens. *Journal of College Student Development*, 4, 383-403.

- Renn, K. A., & Arnold, K. D. (2003). Reconceptualizing research on peer culture. *Journal of Higher Education*, 74, 261-291.
- Rossman, G. B., & Rallis, S. F. (2012). *Learning in the field: An introduction to qualitative research* (3rd ed.). Thousand Oaks, CA: SAGE Publications.
- Saldana, J. (2009). The Coding Manual for Qualitative Researchers. Thousand Oaks, CA: Sage.
- Schaeffer, N. C., & Presser, S. (2003). The science of asking questions. Annual Review of Sociology, 29, 65-68.
- Schlomer, G., Bauman, S., & Card, N. A. (2010). Best practices for missing data management in counseling psychology. *Journal of Counseling Psychology*, 57(1), 1-10.
- Schudde, L. T. (2011). The causal effect of campus residency on college student retention. *The Review of Higher Education, 34*(4), 581-610.
- Schuman, H. (1982). Artifacts are in the mind of the beholder. *The American Sociologist*, 17(1), 21-28.
- Shapiro, J. R., Bauer, S., Hamer, R. M., Kordy, H. Ward, D., & Bulik, C. M. (2008). Use of text messaging for monitoring sugar-sweetened beverages, physical activity, and screen time in children: A pilot study. *Journal of Nutrition Education and Behavior*, 40(6), 385-391.
- Siegel, S. (1956). Non-parametric statistics for the behavioral sciences. New York, NY: McGraw-Hill.
- Stebleton, M. J. (2011). Understanding immigrant college students: Applying a developmental ecology framework to the practice of academic advising. *NACADA Journal*, *31*(1), 42-54.
- Stevens, J. (1996). *Applied multivariate statistics for the social sciences* (3rd ed.). Mahwah, NJ: Lawrence Erlbaum.

- Stone, A. A., & Broderick, J. E. (2009). Protocol compliance in real-time data collection studies: Findings and implications. In R. F. Belli, F. P. Stafford, & D. F. Alwin (Eds.), *Calendar* and Time Diary: Methods in Life Course Research, (pp. 243 – 256). Thousand Oaks, CA: Sage.
- Tashakkori, A., & Teddlie, C. (2008). Introduction to mixed method and mixed model studies in the social and behavioral sciences. In V. L. Plano Clark & J. W. Creswell (Eds.), *The Mixed Methods Reader*, pp. 7-26. Thousand Oaks, CA: Sage. (Original work published 1998)
- Taylor, K. B. (2008). Mapping the intricacies of young adults' developmental journey from socially prescribed to internally defined identities, relationships, and beliefs. *Journal of College Student Development, 49*(3), 215-234.
- Teddlie, C., & Tashakkori, A. (2009). Foundations of mixed methods research: Integrating quantitative and qualitative approaches in the social and behavioral sciences. Thousand Oaks, CA: Sage.
- Terenzini, P. T. (1989). Assessment with open eyes: Pitfalls in studying student outcomes. *The Journal of Higher Education*, *60*(6), 644-664.

Tinto, V. (1993). Leaving college. Chicago, IL: The University of Chicago Press.

- Titus, M. A. (2004). An examination of the influence of institutional context on student persistence at 4-year colleges and universities: A multilevel approach. *Research in Higher Education*, 45(7), 673-699.
- Tourangeau, R., Rips, L J., & Rasinski, K. (2000). *The psychology of survey response*. New York, NY: Cambridge University Press.

Turrentine, C., Esposito, T., Young, M. D., & Ostroth, D. D. (2012). Measuring educational

gains from participation in intensive co-curricular experiences at Bridgewater State University. *Journal of Assessment and Institutional Effectiveness*, 2(1), 30–54.

- Umbach, P. D. (2004). Web surveys: Best practices. In S. R. Porter (Ed.), New Directions for Institutional Research: Special Issue: Overcoming Survey Research Problems, 121, pp. 23-38. San Francisco, CA: Wiley Periodicals.
- Webber, K. L., Krylow, R. B., & Zhang, Q. (2013). Does involvement really matter?: Indicators of college student success and satisfaction. *Journal of College Student Development*, 54(6), 591-611.
- Weisberg, H. F., Krosnick, J. A., & Bowen, B. D. (1996). An introduction to survey research, polling, and data analysis (3rd ed.). Thousand Oaks, CA: Sage Publications.
- Weisner, T. (2014). Findings that matter: The many reasons why mixed methods add value to research and practice. Keynote speach presented at Mixed Methods International Research Association Conference.
- Willis, G. B. (2005). Cognitive interviewing: A tool for improving questionnaire design.Thousand Oaks, CA: Sage.
- Wolf-Wendel, L., Ward, K., & Kinzie, J. (2009). A tangled web of terms: The overlap and unique contribution of involvement, engagement, and integration to understanding college student success. *Journal of College Student Development*, *50*(4), 407-428. doi:10.1353/csd.0.0077
- Wright, J. D. (2009). The founding fathers of sociology: Francis Galton, Adolphe Quetelet, and Charles Booth; or: What do people you probably never heard of have to do with the foundations of sociology? *Journal of Applied Social Science*, *3*(2), 63 72.

- Wright, J. D., & Marsden, P. V. (2010). Survey research and social science: History, current practice, and future prospects. In P. V. Marsden & J. D. Wright (Eds.), *Handbook of Survey Research* (2nd ed, pp. 3 – 26). Bingley BD, UK: Emerald Group Publishing.
- Wu, E. D. (2013). *The color of success: Asian Americans and the origins of the model minority*.Princeton, NJ: Princeton University Press.
- Zhao, C., & Kuh, G. (2004). Adding value: Learning communities and student engagement. *Research in Higher Education, 45*, 115-138.