DOCTOR OF BUSINESS (DBA)

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INFORMATION BEHAVIOR IN THE ONLINE COLLEGE SEARCH PROCESS:

MAXIMIZATION TENDENCY, SELF-EFFICACY, AND DIGITAL MEDIA USAGE

Tracy L. Buss

A thesis submitted for the degree of Doctor of Business Administration

(Higher Education Management)

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ABSTRACT

Prospective college students are faced with a multitude of information sources when conducting their college search, especially with the advent of social media and other digital media. Schwartz et al. (2002; 2004) propose that an abundance of choice makes decision making more difficult, especially for those who can be considered 'maximizers.' Maximizers seek 'the best' and this aspiration is reflected in their individual decision making style, which leads them to seek out more options before making decisions, as opposed to 'satisficers,' who are content with 'good enough.'

This mixed-methods study unpacks the information behavior of high school students as they conduct their college search, examining their preferred media sources and their behavior engaging with these sources. Maximization tendency is hypothesized to impact how they conduct their search. Self-efficacy in online college search is introduced as a variable to explain how students engage with media. Theory on the 'paradox of richness' or level of media social presence (Robert and Dennis 2005) also informs the analysis by recognizing the complexity of the interaction between the medium, the message, and the recipient.

The findings of this study support the view that maximization tendency influences college search information behavior. While self-efficacy does not appear to correlate with maximization tendency, it does provide insight into other aspects of college search. This study also makes a context-based contribution by exploring conditions and boundaries of maximization theory in relation to college search. Further, it provides guidance for higher education digital media strategy, backed by empirical data. Finally, this research adds to and refines the body of theoretical and practical literature on higher education marketing, a field of inquiry that has been relatively neglected by marketing researchers.

ABBREVIATIONS/KEY TERMS

ACT	American College Test
ANOVA	Analysis of variance
CMC	Computer-mediated communication
CRM	Customer relationship management (software system)
DBA	Doctor of Business Administration
FAFSA	Free Application for Federal Student Aid
GPA	Grade point average
H	Hypothesis
HE	Higher education
IB	Information behavior
ICT	Information and Communications Technology
IP	Internet Protocol
ISP	Information search process (Kuhlthau)
MANOVA	Multivariate analysis of variance
MOOC	Massive Open Online Course
MRT	Media Richness Theory
MS	Maximization Scale (Schwartz)
MTS	Maximizing Tendency Scale (Dalal)
PSAT	Preliminary Scholastic Aptitude Test
RQ	Research Question
SAT	Scholastic Assessment Test
SNS	Social networking services
STEM	Science/Technology/Engineering/Math
US	United States
UW	University of Wisconsin (System)

NOTE REGARDING LANGUAGE/TERMINOLOGY

Given that the author of this thesis is American, and the focus of this research is upon American high school students and the US higher education system, it is written in US/American English.

Additionally, some terminology in this thesis may require clarification for readers not familiar with the structure of the US secondary school and higher education systems. For example, *college* is used in the American sense, as a broad, short-hand term referring to institutions of higher education; it can be considered synonymous with *university* for non-US readers (even though there is a formal distinction in the US between colleges and universities, which is not necessary to detail here). The participants in this research project were US high school juniors and seniors, that is, students in their third or fourth (final year) of high school, ranging from 16-18 years old. *Public* high schools and colleges/universities as referenced in this thesis are state/locally-funded institutions, not privately-funded institutions.

CHAPTER ONE – INTRODUCTION

Managerial Problem

Over approximately the last fifteen years, higher education administrators, particularly those working in recruitment, admissions, and marketing communications, have had to continually adapt their practices to meet the challenges of communicating with new cohorts of students, in particular the generation of students often known as the Millennials. The Millennials or Generation Y were born between approximately 1981-1997 (Sparks and Honey 2015). Thus far, the Post-Millennials or Generation Z, born 1998 or after (ibid.), have received much less attention in both research and higher education management. The subjects of this study, ages 16-18 when it was conducted, are on the cusp between 'Gen Y' and 'Gen Z.' Gen Z youth have been characterized as always online yet feeling the anxious need to unplug, and so confident in their creativity and resourcefulness that "75% of teens say you can get a good education in other ways than going to college" (ibid.). With a rapidly shifting technological landscape, reaching these students will require yet more adjusting of tactics to address new social media platforms and other emerging digital media.

Nearly all US higher education institutions have a presence on Facebook and Twitter (Barnes and Lescault 2013) and many others, including HE institutions outside of the US, are also active on social media platforms such as Snapchat and Instagram (Galan et al. 2015). Other sources of digital media for college search include official college websites and blogs; online forums where students exchange advice and thoughts on the admission process; search engines that attempt to help students find colleges that are a 'good fit'; and websites that provide directories and rankings. US college presidents are even engaging online, with over half posting on Facebook and tweeting (Barnes and Lescault 2013). Forty-one percent of US institutions surveyed in 2012-2013 believed that increases in their enrollment could be attributed to social media marketing (ibid.).

For high school students (and their parents or guardians), social media and the wide array of other online media sources provide a wealth of options for researching college possibilities. Depending on their academic performance, finances, and personal preferences, prospective students may have a number of college options from which to choose, and struggle to know how to conduct their search and decide where they will apply.

Study Objective

The objective of this study is to address the overarching research question:

How do high school students engage with multiple information sources as they go about their college search?

This study examines their engagement through three different perspectives, which will be elaborated upon in the following chapters of this thesis:

- The *information seeking behavior* of US high school juniors and seniors as they use online or digital resources to research their college options: To what extent are they seeking college information that will help them become well-informed consumers of higher education? How much time are they spending on their college research, overall and engaging in specific activities, and what resources are they using? Are they showing a preference for digital media versus more traditional sources of information such as print media, college visits, talking to friends and family, and high school guidance counselors?

- The *decision making style* of students in an information-rich environment and its impact on their college information seeking: Do students who show a propensity to maximize in their decision making act differently than those who satisfice when it comes time to research colleges and decide upon where they will apply?

- The *self-efficacy* of high school students in using digital resources to search for college information: Are students confident of their ability to find the information they need to make college decisions by

searching online or using social media? Does a sense of self-efficacy in this domain correlate with their decision making style? For example, do maximizers rate themselves higher in self-efficacy than satisficers, or vice versa? Is there a connection between students' ratings of self-efficacy and their media preferences when conducting their college research?

Key concepts related to this research are information behavior, judgment and decision making, self-efficacy, and media choice.

Theoretical Foundation

This thesis is rooted in Herbert Simon's theory of satisficing (1956), which seeks to explain how individuals act rationally to satisfice when presented with a number of options. 'Satisficers' choose to self-limit their options from which to choose by reaching a point at which their choice is considered 'good enough,' lowering their standards or aspiration level. More recently, the theory has been developed and applied to the 'paradox of choice' detailed by Schwartz (2004), who argues that the proliferation of choice in modern society is making us miserable. It is recognized that choice is not a universal aspiration, as it can take on different meanings across cultures and social classes (Markus and Schwartz 2010). This project, as well as Schwartz et al.'s research on maximizing and choice (2002; 2004), is focused on choice as it is perceived in the US and amongst educated, relatively affluent Westerners.

Schwartz's research could be said to focus more on maximizing, which can be defined as information behavior that involves the exploration of many different options before coming to a decision. Per Schwartz et al., being a maximizer or satisficer is considered an individual difference trait, and they developed a Maximization Scale for its measurement (Schwartz et al. 2002).

The theory of maximizing and/or satisficing has been studied in various contexts including online information behavior (Agosto 2002; Dalal et al. 2015). Consequently, it provides a useful framework with which to understand the

experiences and behaviors of students as they make their college choices. This is a key gap in the literature which this study seeks to address.

A secondary theoretical thread interwoven into this study is self-efficacy (Bandura 1986a; 1986b; 1997): "Perceived self-efficacy refers to beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments" (Bandura 1997, p. 3). While high school students are searching for college information, preparing for what arguably could be one of life's most important decisions, do they feel competent in their abilities to conduct their college research, especially when they may be feeling overwhelmed with sources of information and uncertain where to begin looking? While self-efficacy as a theory can be applied across different contexts, self-efficacy measurement is domain specific, and a review of the literature did not reveal any studies that have specifically examined the self-efficacy of high school students in their search for college information online. Self-efficacy theory could help explain how students go about their college research and provide insight into which information sources they prefer or use most.

Finally, this project also draws from media richness theory (Daft and Lengel 1986; Lengel and Daft 1989; Robert and Dennis 2005) to classify types of 'new' digital media as a means to explore how students choose media in their college information search. While this study was not specifically designed to test the 'paradox of richness,' this theory provides a useful framework to examine if maximizers or satisficers show an inclination to use media with low, moderate, or high social presence during their college search.

By utilizing these complementary theories, this study is able to consider the phenomenon of information behavior in the college selection process from the user and media perspectives.

Contributions of the Study

This study contributes to the literature in three primary ways.

First, this study further develops maximization theory by considering new relationships between maximization and previously unexamined moderating

variables, including self-efficacy in information search. It focuses on the potential of maximization tendency to be a predictor of information seeking behavior (rather than using it as a variable to explain whether a student with maximizing tendencies might regret his or her college decision later, for example).

Second, it makes a context-based contribution by using the theory of maximization in a college search context. The findings indicate that students who are classified as 'maximizers' conduct their search by viewing more digital media sources; they are also more engaged with the sources they view. Students who are maximizers also show stronger preferences for certain college search media and activities, being more likely to attend college information sessions and fairs and read college marketing emails, when compared to satisficers.

Third, the practitioner contribution and implications are significant. This research was designed to produce actionable insights to improve higher education marketing practices, especially in the area of digital media strategy. Given this study's findings on how individual difference traits influence college search behavior, practitioners may decide to reconsider how digital media are presented or delivered to students. For example, the Robert and Dennis (2005) 'paradox of richness' model was provisionally updated and incorporated into this study to explore the match between the medium and the message in college marketing, using traditional and digital information channels.

Additionally, as will be discussed in *Chapter Four: Literature Review*, the marketing of higher education is still an underdeveloped field that merits more dedicated research due to its unique nature (Hemsley-Brown and Oplatka 2006; 2015; 2016). The research questions addressed in this study are exploratory, and they provide some empirical insights that could inspire future research. The existing college choice models are somewhat limited. They do not directly take into account how psychological traits might influence individual choice behavior or how engagement with external information sources such as digital media contributes to the mix of college information traditionally received from college marketers,

teachers, counselors, friends and family. While this study does not attempt to create a new model of college choice, it could be a step in that direction.

The results of this study may also be used to improve the practice of guiding high school students through the college search process, providing them with the skills and confidence to gather information to make well-informed and reasoned college decisions. Recommendations in this area are included in the final chapter of this thesis.

It is of note that this research focuses upon the information behavior of individual students, high school juniors and seniors, who are on cusp between Generation Y (the Millennials) and Generation Z. Students in this age group are difficult to reach and research given their status as minors (Lenhart 2013). While this study rests upon the assumption that individual differences are more relevant in explaining behavior than generational differences, those who do research using generalizations about age groups may still find this study of interest, and valuable as a scarce resource given the complications of conducting such research.

Finally, the innovative methods and design of this study - the use of Facebook and Instagram advertising to recruit participants and the heat-mapping feature within the survey instrument to measure participant engagement - can be shared with other researchers for their own experimentation.

Study Scope

This research is focused upon the online information behavior of US high school students. As an administrator working in a large public (state-funded) institution in the US Midwest, I did not want to limit my study to examining students at my institution or state/region; rather, I wished to gather data from high school juniors and seniors from across the US. For the survey administered in this study, I was able to reach 251 high school students from 45 states, including Alaska and Hawaii; my recruitment of survey participants using Facebook and Instagram advertising made this possible.

Since I work in the field of international education, managing internationally-focused academic and research programs in my university's

international center, the idea of being able to include students from outside the US was appealing to me. However, given world regional differences in social media platforms, structures of higher education systems, and recruitment practices, for example, it was necessary to limit the scope of this study to US students. Nonetheless, the study findings should be of interest to HE administrators globally.

Information behavior is the primary focus of this study. College choice, how students decide upon which college they will attend after acceptance, is also discussed throughout this study since the search process cannot be studied in a vacuum and the two processes are related. However, this study is mainly concerned with how high school students go about their college information gathering and build their choice set, or list of colleges to which they will apply. It explores how engaged they are with digital media, as well as other sources of information. According to Chapman's model of the college selection process (1986), described in *Chapter Four: Literature Review*, this research focuses on phase two, Search Behavior.

Thesis Organization

The organization of this thesis is represented in Figure 1 below.

Figure 1: Thesis Organization

Introduction - Chapters 1 & 2	•Managerial Problem •Theoretical Foundation •Study Objectives & Expected Contributions •Rationale and Context
Literature Review - Chapters 3 & 4	•Views of Digital Media/Technology & Society •Contextual Review by Themes/Topics •Theoretical Review
Research Questions and Hypotheses - Chapter 5	•Six Hypotheses •Four Research Questions
Methodology- Chapter 6	•Philosophy/Approach •Research Design •Procedures & Measures •Ethical Considerations & Methodological Limitations
Research Findings – Chapters 7 & 8	•Focus Groups •Survey
Discussion – Chapter 9	•Contribution I •Contribution II •Contribution III
Conclusion – Chapter 10	•Limitations •New Knowledge •Future Research •Recommendations

CHAPTER TWO – RATIONALE AND CONTEXT

Anxiety permeates the mood of many households with young adults who are in the midst of the college application process (Hirshey 2008; Teare 2015; Thacker 2005; Tierney 2014). High school seniors, worn down from multiple Saturdays taking the SAT or ACT and putting in their requisite extracurricular and volunteer hours, alongside the heavy daily workload of their Advanced Placement classes, feel like they have had enough already. They might find it almost insulting that after all of their efforts, they now have to wade through the accumulated pile of college brochures that sit perched all too close to the recycling bin. If these students are fortunate to attend a well-funded college preparatory high school that takes its responsibilities seriously, and truly caters to their needs, they may have a guidance counselor who knows them on an individual basis. Ideally, their counselor will walk through all of the options to determine a list of potential 'best fit' colleges organized in categories like 'high reach', 'low reach', 'match', and 'safety'. Or perhaps they have parents who have been through the process with older siblings, and they can provide some advice (whether they will heed it or not is another matter). And of course, in many cases, family finances can dictate how they go about seeking information; on opposite ends of the socioeconomic spectrum, college visits to explore campuses are considered in lieu of the usual family vacation, while other families may fret over the prospect of having to come up with the fees for applying to multiple colleges. However, perhaps what is most anxiety-inducing for most of these students is that they are about to make what is likeliest the biggest life decision that they have had to make to date, and they are overwhelmed by all of the options, some apparent and others yet to be discovered. According to the US Department of Education National Center for Education Statistics, as of 2010/11 there were 4,599 postsecondary degree-granting institutions in the US (NCES 2014).

In *The Paradox of Choice* (2004), Schwartz argues that the proliferation of choice in our modern society can make some people miserable, particularly those of us who are 'maximizers' intent on leaving no stone unturned when comparing

options; on the flip side are 'satisficers', who are satisfied with 'good enough'. Simon developed the concept of satisficing in the 1950s and described it as:

> "…a simple mechanism of choice that would suffice for the behavior of an organism confronted with multiple goals. Since the organism, like those of the real world, has neither senses or the wits to discover an 'optimal' path – even assuming the concept of optimal to be clearly defined – we are concerned only with finding a choice mechanism that will lead it to pursue a 'satisficing' path, a path that will permit satisfaction at some specified level of all of its needs" (Simon 1956, p. 136).

Schwartz's research builds upon Simon's theory and concludes that "…the proliferation of options not only makes people who are maximizers miserable, but it may also make people who are satisficers into maximizers" (Schwartz 2004, p. 96). Making the connection to planning for higher education, the plethora of options, combined with time pressure, other life stressors, and inexperience with decision-making, may push students to become satisficers when it comes to college choice. That is not to say that being a satisficer is a sub-optimal position; however, it is worth exploring whether students have a greater tendency to maximize or satisfice when they go about their college information seeking. According to Schwartz, there is fluidity along the maximizer – satisficer scale and individuals can be maximizers when making some decisions and satisficers for others. Are prospective college students missing opportunities that could be theirs if they had taken the time for more intensive research, or received better guidance from their internal networks of school counselors, family, or peers? Today's students have more external (i.e. non-school, friends, and family) information sources than ever before when it comes to searching for colleges. They have access to Facebook pages and Twitter feeds with admissions representatives whose job it is to answer their questions the same day, and online forums that allow them to compare notes with their college-searching peers and with current students at the colleges they are considering. Yet many continue to be confused and overwhelmed, and as a

result may feel compelled to 'pick' somewhat arbitrarily rather than 'choose' thoughtfully, and compromise decision quality.

It is also possible that the vast buffet of information could have the opposite effect, turning relatively carefree students into neurotic, unhappy consumers who anticipate that since there are so many higher education and career paths along which they can travel, that the potential for regret is huge if they choose the 'wrong' one. They may become information gluttons who cannot have enough. The pressure is on when, according to Schwartz, "We all seem to be swimming in one giant pond these days, and anyone's life could be ours" (Schwartz 2004, p. 192). We commonly advise our young adults that higher education prepares them for the careers of the future, some of which do not even exist yet, when they are having a difficult time comprehending the substantial array of careers already open to them. For example, the Association of American Colleges & Universities (AAC&U) sets the standard for liberal education in the US with its widely implemented Liberal Education and America's Promise (LEAP) essential learning outcomes (AACU 2015). While the AAC&U emphasizes that a liberal education is "An approach to college learning that empowers individuals and prepares them to deal with complexity, diversity, and change," it may be the case that many students are still feeling ill-prepared, not empowered, to meet the challenge of picking apart what this complexity means to them in their search for the 'right' college and career. A clear educational path leading to specialization may be what provides comfort to someone floundering when making life's big decisions.

These are broad questions and in order to distill them into a set that is manageable to address, this project focuses on the information behavior of prospective college students in an online environment, with the lens on tendencies to use satisficing behavior and operate within the constraints of decision-making limits (which Simon (1956) coined as 'bounded rationality'). Given that the Internet is the most broadly accessible, arguably democratic, means for the majority of American students to find information on colleges, and new information resources seem to come online every day, it is fertile ground for such research. While it is true that much college information is received from peers and those in one's

internal reference groups, "As the number of choices we face continues to escalate and the amount of information we need escalates with it, and we may find ourselves increasingly relying on secondhand information rather than on personal experience" (Schwartz 2004, p. 61). There can be wisdom in crowds (Surowiecki 2004) and students sense this and grasp at it using the Internet, although perhaps in not a coordinated manner. LinkedIn has even jumped on this bandwagon, recently launching its University Finder that "pulls data from 313 million profiles to find out which schools and degrees translate into jobs at certain companies" and a Decision Board feature that encourages students to ask their LinkedIn connections for advice on where to apply (Flaherty 2014). Some other sites that do similar information aggregating, in some cases to predict admission, are Parchment (2014) and StatFuse (2014). As noted by Daun-Barnett and Das, "Web tools are an important contemporary feature of the college-choice process and they have not been systematically studied in terms of substance, style or effect on students" (2013, p. 118). Rather than study the tools themselves, the aim of this study is to examine how students approach and interact with online college search resources. How they behave when searching to create their college 'choice set' (the colleges to which they will apply) may be linked to their propensity to maximize or satisfice.

CHAPTER THREE – VIEWS OF TECHNOLOGY AND SOCIETY

Introduction

The review of the literature in this chapter on technology and society is divided into four main theoretical perspectives: utopians, skeptics, technological determinists, and contextualists. It is impossible to neatly place each of the theorists mentioned here into a single camp; nonetheless, these categorizations serve the purpose of structuring the discussion. They were inspired by Toyama's (2015) analysis.

This review is intended to be an overview rather than in-depth, and will focus upon the role of digital media and technology in the lives of young adults, including in the classroom. Where applicable, it will connect the differing schools of thought to this study's context, higher education. This chapter will conclude with a summary of the theories of technology and society that are most closely aligned with this research project. A more comprehensive review of the literature, detailing the contextual and theoretical gaps addressed by this study, is in *Chapter Four*.

Utopianism

The utopians believe that technology innovations such as predictive analytics to target at risk students and encourage their retention, MOOCs, and flipped classrooms, will move higher education into a new, enlightened era. For example, Buckingham reports on some of the rhetoric he witnessed at the British Education, Training and Technology Show: "…'the digital age' is a 'new era'…an opportunity to 'build your future'. Such assertions are frequently accompanied by images of outer space, the earth, the sun and the solar system" (Buckingham 2007, l. 299). According to Joseph South, the director of the Office for Educational Technology at the US Department of Education, "The National Education Technology Plan provides a vision of transformational learning experiences powered by technology that can shrink long-standing equity and accessibility gaps" (US Department of Education 2016). This plan, presented on a website including numerous examples, emphasizes that new technologies create opportunities for

learning that are personalized, blended, collaborative, and project-based. Prominent on the website is also a disclaimer: "While essential, closing the digital divide alone will not transform learning. We must also close the digital use divide by ensuring all students understand how to use technology as a tool to engage in creative, productive, life-long learning rather than simply consuming passive content" (ibid.).

One critic of such technological utopianism in the classroom is Cuban (1986; 2001; 2002), who was one of the first to recognize a lack of connection between computer availability in classrooms and computer use. Cuban's research showed that teachers implemented technology in a manner that tended to sustain existing classroom practices rather than overhaul them, and that teachers and students alike demonstrated low frequency of usage relative to access. Of course, since Cuban's early research, there have been a large number of studies examining the prevalence and integration of computers in the classroom (a few examples include Brinkerhoff 2006; Mueller et al. 2008; and Ottenbreit-Leftwich et al. 2010). More recently, however, the educational technology debate appears to have shifted focus to learning in the Web 2.0 environment of user-generated content and social media, and to how technology-assisted learning occurs outside of the traditional classroom. Johnson's (2009) research found that students who considered themselves to be technological experts (an assessment shared by their family and peers), actually did not perform as such in the context of school. Luckin et al. (2009) focused upon patterns of use, categorizing 11 to 16-year-old Web 2.0 users into researchers, collaborators, producers, and publishers. They found high use of social of social networking and file sharing sites, but disappointingly low activity in the four categories they studied; additionally, there was a noted lack of sophistication in their use, which they potentially attributed to a lack of technical knowledge. More recently, Vainikka and Herkman (2013) investigated the online reading habits and content creation activities of young adults in Finland, and witnessed a distinct pattern of passive consumption of online media; online content producers were a small minority. These studies contrast with the utopian visions aspired to by the US Department of Education and others, including the purveyors of educational

technology tools. They also point to a need for research examining how high school students contribute to the dialogue on college search and provide each other with guidance and support on online college forums, for example.

A subset of the utopian literature focuses on neuroscience, in particular on the science of attention, and upholds that our brains have the capability to adapt to the multitasking encouraged by digital media. Davidson (2011) deconstructs the stereotype of young learners as bombarded by multiple stimuli that distract them from learning. Quite the opposite, she argues that learning occurs when an old pattern is disrupted, therefore, being distracted in our multimedia modern world actually provides more opportunities for learning: "Multitasking is the ideal mode of the twenty-first century, not just because of information overload but because our digital age was structured without anything like a central node broadcasting one stream of information that we pay attention to at a given moment" (Davidson 2011, p. 6). Teachers should focus on the "new three Rs" – rigor, relevance, and relationships – and reject a standardized curriculum, which was a better fit for training workers in an industrial work model of the past; focused attention was needed to be efficient completing assembly line tasks, but creative, collaborative problem-solving is what we need today. We need to engage students in learning and "unlearning," which Davidson says "…requires that you take an inventory of your current repertoire of skills, and that you have the confidence to see your shortcomings and repair them" (ibid., p. 86). In Davidson's utopia, students will be collaborative, creative multitaskers. However, it remains to be seen how empirical research could verify her lofty claims. Perhaps the "confidence" that she mentions could be measured via a self-efficacy scale, but beyond that, the other variables that could be included in such an analysis become murky. Hayles (2007) makes an argument similar to that of Davidson in her essay on hyper- and deep-attention, hypothesizing that there is a generational divide in cognitive modes. She sees hyper-attention as needlessly maligned. We are seeing a generational shift toward more young people being on the far end of scale for attention deficit/hyperactivity disorder, according to Hayles, but this hyper-attention can be beneficial since it makes us more able to quickly adapt. Now educators must take action to find ways

to meet these hyper-attentive learners where they are. Notably, like Davidson, Hayles has not tested her hypotheses empirically, and she provides only a few examples of what an interactive classroom catering to hyper-attentive students might look like (imagine lots of screens and real-time commenting). Unfortunately, the literature in this area has not yet caught up to these hyper-attentive youth who demand further study.

Skepticism

From a skeptic's perspective, government, foundation, and institutional funders seem to prefer technology-laden education initiatives despite uncertainty about their value. A recent *Chronicle of Higher Education* article entitled "Innovation – Everyone Says It's the Answer, but Is It What Colleges Need?" (Carlson 2016) points out the irony in supporting initiatives that are new and interesting while what higher education really needs is a sustainable funding model. New technology is the shiny, bright thing that distracts us from really seeing what is going on. Toyama is blunt on the topic: "...one prediction is this: If you're interested in contributing to a fair, universal educational system, novel technology isn't what will do the trick" (Toyama 2015, p. 54). Anyone can tweet, but not everyone can do it effectively if they do not have the requisite communication skills.

Toyama calls his theory on technology and learning the "Law of Amplification," according to which "...technologies don't have fixed additive effects. They magnify existing social forces, which themselves can be good, bad, or neutral" (ibid., p. 30). For example, in a school setting, introducing new laptops into a classroom that is already disorganized and unfocused could make it more so; students already prone to spend their online time frivolously will probably end up playing more games, spending more time on Facebook, etc.

Educational technology as a field of research is criticized rather harshly by skeptical scholars such as Gouseti (2010), Selwyn (2010; 2011), and Oliver (2011). It is accused of: overemphasizing the influence of technology (i.e. being too reliant on technological determinism as a guiding philosophy) (Oliver 2011); being closed and

resistant to viewpoints that contradict its core beliefs and values (Selwyn 2011); and being too focused on the short-term potential of technologies rather than taking a long view of the social consequences of how technologies are eventually used in the classroom (Gouseti 2010). Selwyn (2011) recommends that a healthy dose of pessimism could advance the field, not pessimism that signals resignation but that inspires exploration, engagement with realistic alternatives, and an evidence-based approach to research. Engaging with the negative may lead to more conservative, modest interventions but at least these interventions may be more successful and sustainable. Gouseti (2010) suggests systematic reviews of the existing evidence including meta-analyses, and moving towards more empirical, rather than theoretical, studies. Additionally, she calls for more interdisciplinary examinations of technology and education, and investigation of gaps between in- and out-of-school Web 2.0 engagement, both of which are aspects of this research study. While there is an undercurrent of technological determinism running throughout this study, it is not swept away in that one direction by being too tightly bound to any one theoretical camp.

Bauerlein is one of the harshest critics of youth and technology, as is evident in the incendiary title of his book *The Dumbest Generation: How the Internet Stupefies Young Americans and Jeopardizes Our Future (Or, Don't Trust Anyone Under 30)* (2008). The crux of Bauerlein's argument is that technology use is eroding young peoples' reading, writing and critical thinking skills, knowledge of history and culture, and civic engagement, since time spent on the Internet and social media could be better spent on "reading essays, conjugating foreign verbs, supporting a local politician, or disassembling an old computer" (Bauerlein 2008, p. 138). He also claims that teens, despite the significant amount of time they spend online, are actually not skilled in using technology, in particular navigating websites, and he cites research by the Neilsen Norman Group to prove his point (Loranger and Neilsen 2013). Bauerlein pines for an earlier time, even though it is too late to turn back the clock now:

> "In pre-cable, pre-Internet times, competition was limited, and
> viewers sometimes watched programs that didn't jibe with their

likings. The mismatch could be frustrating, but it occasionally served

an edifying purpose: forcing people to recognize other peoples,

different tastes, distant knowledge…if they wanted to tune in at all.

Yes, the concentration of media in a few hands sometimes

engendered a cultural arrogance among the producers and an

ideological narrowness in the programming. But it also introduced

young minds to what they might have missed if they had obeyed

only their own dispositions" (Bauerlein 2008, p. 157).

While generally, it is an accurate observation that teens in past decades did not have to wade through an abundance of choices, Bauerlein offers nothing new that those studying contemporary teens and technology have not already observed. His argument lacks empirical evidence and theoretical heft. Bauerlein did not interview students for his book, seeking to examine why they make the media choices they do.

Technological Determinism

According to technological determinists, technology drives societal outcomes. Technological determinist theorists fall along a continuum, with 'hard' determinists such as McLuhan (1967) leaving little room for debate that we are being shaped by technology in ways beyond our control; new technologies take on a life of their own and change the way we think, feel, and act. A 'soft' determinist might hold a similar view, but with less certainty about the outcome. Gunkel explains the distinction well, while also noting that it should not be strictly dichotomized: "Hard determinism makes technology the *sufficient* or *necessary* condition for social change, while soft determinism understands technology to be a key factor that *may facilitate* change. Although the two modes are distinguished from one another, the boundary between them is often blurry and flexible" (Gunkel 2003, p. 510).

The technological determinist viewpoint has been influential in the introduction of ICT in schools, when it is often taken as self-evident by school administrators that teachers and students should adapt to technology rather than

the other way around (Pederson 2001). As is palpable in the utopian literature described above, this determinism can sometimes project an optimistic tone; even while little control can be exercised over this inevitable chain of events, it is assumed that teachers and students will benefit in the end. Determinist technologies are also seen to have inherent qualities or logic of their own; they are autonomous (Pederson 2001; Selwyn 2010). This school of thought can be classified as pessimistic determinism.

"The key issue is not about how technology is going to evolve in the future but how we, consumers, are going to evolve through incorporating these technologies as part of our everyday lives" (Llamas and Belk 2013, p. 10). Hoffman et al. (2013) discuss "the digital consumer" using a social media version of a 4Ps model that describes the consumer's goals as: connect, consume, create, and control. Social media is shaping how we connect with each other by replacing some in-person interactions. For example, incoming college students quickly learn that many of the resources they need to become acclimated to college life are being housed exclusively on social media platforms, leaving them with little choice but to engage online. Consuming digital content can be intentional, such as in the case of the prospective college student visiting an online college forum, or indirect, by incidentally reading a friend's account of something that just happened in her dorm or seeing a Snapchat story, for example. Either way, how the student engages with digital media is not completely predetermined; there is an element of choice that remains, but the reality is a world in which we cannot escape engaging with technology and allowing our lives to be shaped by it to some degree.

The notion of technology as autonomous, that technology gives birth to more technology and there is no going back, informs this study of technology in higher education marketing. Often the solution to the unanticipated problems of technology becomes more technology, as Ellul (1964; 1990) and others have argued (Dusek 2006). Those involved in managing social media, for example, can relate to the work involved in keeping up an active social media presence; to do so involves posting during key times of day when traffic will be high, requiring more technology in the form of a social media dashboard. It becomes necessary to have

video that captures what is happening on campus, perhaps requiring the use of editing software to clean up the video before posting it. The social media manager's supervisor also wants to know how the social media activity is impacting the university's website analytics, and is interested in purchasing software from an outside vendor that would track prospective student interest. These snowball effects of technology are readily apparent in higher education.

Carr makes his pessimistic determinist stance clear in the title of his book *The Shallows: What the Internet is Doing to our Brains*, aligning himself with determinists like McLuhan, who argued that "…in the long run a medium's content matters less than the medium itself in influencing how we think and act" (Carr 2011, l. 111). Carr views "the medium" broadly - the Internet, to include social media and e-books. Cognitive overload is one of the outcomes that Carr laments, comparing the flow of information from the Internet to a number of blasting faucets. We rush around with an overflowing thimble to catch all of the water we can and end up with "a jumble of drops from different faucets, not a continuous, coherent stream from one source" (ibid., p. 120). Our working memory load is overwhelmed as we become proficient scanners unable to engage in deep reading. Carr claims that "we are evolving from being cultivators of personal knowledge to being hunters and gatherers in the electronic data forest" (ibid., p. 134), who cannot see the forest through the trees. Additionally, Carr observes that free and easy access to the Internet is damaging our memories; if we have it at our fingertips to look up answers to life's questions, big and small, why do we need to build and rely upon our personal memories? We are becoming shallow thinkers.

Quite relevant to this research, Carr observes that search engines are serving as amplifiers of popularity, returning search results based upon what others have viewed, capturing us in a feedback loop. Additionally, with their efficiency, search engines are regularly helping us circumvent the need to sift through information that may initially appear to be irrelevant, but could actually result in fortuitous results, leading us down paths that we would not have otherwise travelled. In the past, many students learned of their college options at college fairs. Today, they might be more inclined to skip fairs knowing they can find

information on the Internet. Students 'forced' to make their way past tables staffed by college representatives might end up engaging with institutions that they may not have found online if they conducted a targeted college search using keywords indicating their pre-conceived college decision factors. The efficiency with which a college search can be conducted using the Internet has the potential to stifle open-minded search. Similarly, the traditional print college guides you can find at the bookstore, that encouraged lazy browsing, are close to being replaced by online guides like that offered by US News & World Report. While it initially seems counterintuitive to think that there are benefits to less efficient information seeking, this could be the case with online college search.

This research study takes a moderately deterministic approach, since it presumes that the proliferation of digital media has led to information overload which in turn is impacting young people as they go about their college search. However, the impacts are seen as individualized (based on differences such as decision style), not uniformly distributed or inevitable, which breaks with a strict or 'hard' definition of technological determinism. Whether this is optimistic or pessimistic determinism is open for debate, though. Schwartz (2002; 2004) argues pessimistically that the proliferation of choice overload is making us miserable (this is the 'paradox of choice'). On the other hand, the possibilities for using digital media to reach more students to efficiently inform them about their college options leave some room for more optimistic thinking.

Contextualism

Contextualists generally take the view that young adults' interaction with digital media can only be fully understood by looking at the big picture and examining their online behavior in sociocultural context. Looking through a contextualist theoretical lens, technologies do not affect all people in the same way. Nye (2006) attempts to dismantle the technological determinist framework by arguing, in contextualist fashion, that cultural forces have shaped uses of technology, rather than the other way around. Technologies are too unpredictable to be deterministic: they often do not have immediate impact, they sometimes fail

to win acceptance, and they can be put to use in unexpected ways. However, Nye does acknowledge that "…people become enmeshed in a web of technical choices made for them by their ancestors" (Nye 2006, p. 20). For example, a contextualist studying usage of social media would note that not all young people embrace social media with the same level of enthusiasm; some may reject it for personal reasons (e.g. time management or parent-imposed limits) or cultural influences (e.g. religion) or perhaps opt out after a bad experience with online bullying. Students generally have some control over the types of technologies they adopt (e.g. texting instead of using a phone to talk) and the time that they spend using technologies (e.g. playing video games), perhaps with the exception of using computers to do their schoolwork.

boyd provides another contextualist perspective in her research of teens and digital media. She spent seven years embedding herself in youth culture, talking with and observing teens from eighteen US states, for her influential study detailed in *It's Complicated: The Social Lives of Networked Teens* (2014). boyd coined the term "networked publics" which she defines as:

> "…publics that are restructured by networked technologies. As such, they are simultaneously (1) the space constructed through networked technologies and (2) the imagined community that emerges as a result of the intersection of people, technology, and practice" (boyd 2014, l. 197).

These publics are the spaces in which teens engage with their peers, in an age when in-person interactions have been scaled back, in some cases constrained by parental concerns (think hypervigilant parents who worry about their children walking or biking to school or a friend's house to hang out) and in others by teens themselves, as they opt to communicate online in spaces that allow them to "gather with friends while balancing privacy and safety with humor and image" (ibid., l. 710). boyd sees no reason why digital celibacy would be necessary for healthy teen development; she argues that much of what parents might define as cyber bullying is viewed by their children as merely "drama." Teens have become

very skilled at encoding meaning to guard their online privacy, therefore, parental interpretations are often off-base.

boyd also observes that "Social media does not radically rework teens' social networks. As a result, technology does not radically reconfigure inequality" (ibid., l. 2829). Teens usually stick with their pre-existing homophilous social networks. Additionally, she notes that when she began her research during the 2006/07 school year, there was self-segregating occurring along race lines between Facebook and MySpace. Despite this, the college admissions officers boyd interviewed about their bias towards using Facebook for their marketing said that their resources were limited, so they prioritized Facebook, and they "had never considered the cultural consequences of their choices" (ibid., l. 2845). Fortunately, as digital marketing has become more sophisticated and college admissions officers have become increasingly focused on attracting a diverse student body, it seems less likely that boyd would hear the same answer if she asked this question today.

Despite the optimistic picture boyd paints of teens' digital savvy, skillfully evading their parents watchful eyes online, she strongly acknowledges that teens' deep intimacy with social media does not automatically result in a high level of digital literacy. Teens still need "to develop the skills and knowledge to engage with contemporary technology effectively and meaningfully. Becoming literate in a networked age requires hard work, regardless of age" (ibid., l. 2882). boyd takes exception to the term 'digital native,' as do others (Bennett et al. 2007 and Coombes 2009 are just a couple of examples), noting that it carries an embedded assumption that teens have the skills they need since they were born in the Internet age and puts them at risk; educators, parents, librarians and others should teach media literacy. However, the question remains: who is going to take the ultimate responsibility for teaching these skills? For example, are parents, who may or may not have these skills themselves, well positioned to do so? It would seem to be the role of schools to interweave digital literacy lessons throughout the curriculum.

Other

Baron (2010) and Turkle (2012) appear to fall somewhere between the technological determinists and contextualists with their shared concern that online communication is replacing spoken interaction, to our detriment. Baron notes that adults, not just students, regularly engage in discourse management; ICTs help us avoid or avert linguistic encounters, when they are not infringing on our privacy and solitude or putting in us in a constant state of communication overload. Both researchers observed that young people are increasingly stressed by being "tethered" to their parents, and also their friends and virtual acquaintances; keeping up with mediated communication takes a lot of work, as does cultivating your online personae. As Turkle notes, "Technology helps us manage life's stresses but generates anxieties of its own. The two are closely linked" (Turkle 2012, p. 243). Identity management can be close to a full-time job for young people, and some are becoming quite skilled at it. Beyond carefully curating their online profiles, this work extends to the college application process:

> "Now they are beginning to construct personae for college applications. And here, says Tom, 'You have to have a slightly different persona for the different colleges to which you are applying: one for Dartmouth, a different one, say, for Wesleyan.' For this aficionado of profile writing, every application needs a different approach. 'By the time you get to the questions for the college application, you are a professional profile writer,' he says" (ibid., p. 183).

While one could argue that this ability to craft different identities seems to be a positive outcome in this case, if it helps students become better able to gauge what others want to hear and see, it is quite obvious that authenticity is sacrificed. At a certain point, they risk losing sight of their authentic selves. This loss of authenticity could come at the expense of their psychological well-being (Grieve and Watkinson 2016).

Turkle also pulls back the curtain on the notion of 'helicopter parents,' noting that while young people rightfully claim that their parents expect to be constantly connected, they too are to blame:

"We read much about 'helicopter parents.' They hail from a generation that does not want to repeat the mistakes of its parents (permitting too much independence too soon) and so hover over their children's lives. But today our children hover as well. They avoid disconnection at all cost" (Turkle 2012, p. 248).

This communication co-dependence has serious negative implications for the ability of young people to make decisions. If experience builds a sense of self-efficacy, as Bandura would lead us to believe, how can high school students who rely upon their parents to help them make life's little decisions be expected to become confident independent decision makers able to make a decision like where to attend college?

Another time-consuming cognitive stress inherent in digital communication that Turkle highlights is the need to match "the medium with the message":

"…in the spirit of Marshall McLuhan…the medium is the message: if you are at your computer, the medium is formal, and so is the message. If you are running around, shopping, or having a coffee, and you swipe a few keys on your phone to send a text, the medium is informal, and so is the message, no matter how much you have edited the content" (ibid., p. 199).

While Turkle is somewhat convincing on this point, there remains the contradictory anecdotal evidence that many high school and college students tend to write emails to their professors in 'textese.' Baron's research (2010) into the linguistics of electronically-mediated communication pointed in a direction opposite of Turkle, indicating that in fact, young people do have a difficult time switching their language as they switch media. Linguistic practices have become much more complicated to navigate. Newport puts it well: "…because these technologies

change rapidly, this process of mastering hard things never ends. You must be able to do it quickly, again, and again" (Newport 2016, p. 31).

Conclusion

The exploration of these theoretical perspectives serves to ground this study in a larger societal framework. These multiple theories illustrate that there are many differing views on how technology impacts young people, and us all. This research study does not adopt one single theoretical perspective on technology and society to advance its analysis, rather it recognizes the varied perspectives as a starting point to an inclusive and nuanced study of information behavior.

Given that this research explores how choice or media overload is impacting high school students as they search for college information online, it aligns most closely with the views of the technological determinists, such as Carr and McLuhan. This research proposes that the proliferation of digital media sources that students can access to find college information may be influencing their information behavior. However, this behavior may differ depending upon an individual's propensity to maximize or satisfice in their decision making, as Schwartz would argue.

While this study is not an ethnographic, purely qualitative study like boyd's, it is post-positivist, mixed-methods research that has been informed by the focus groups that were conducted in the first phase, out of a desire to gain a rich understanding of the place or space that high school students find themselves in – they are possibly planning for college and anxious or excited to be in the final stages of high school. And of course, not all students are going to feel the same about the process or have similar capabilities in information search and decision making; their individual self-efficacy in these tasks will differ, as will their level of engagement with the technology they have available for their college search.

From an optimistic, utopian point of view, how students engage with the technology they have available for college search presents a world of opportunity. If they can be guided by school counselors, teachers, parents, and others to build their digital literacy skills, they may be able to make more informed, higher quality

decisions than they could without the multitude of digital resources available to them. Perhaps search results including an array of digital resources that are customized according to personality type or decision making style will make the future of college search less daunting. These prospects will be discussed in the *Conclusion* of this thesis.

CHAPTER FOUR – A REVIEW OF THE LITERATURE

Introduction

The literature review for this project mirrors its multi-faceted approach to exploring information behavior. It draws from the research of Schwartz et al. (2002; 2004) and Simon (1956) to examine information seeking and choice overload. Bandura's theory of self-efficacy (1986a; 1986b; 1997), which has been applied to Internet and social media use, is extended to online college search. Additionally, the 'paradox of richness' theory of Robert and Dennis (2005) grounds the media choice element of this research. Figure 7 in *Chapter Six: Methodology* provides an explanation of the proposed interrelationships between these theories.

The first section of this literature review will focus upon the topics and themes relating to the context of this project, with the goal of providing an overview, but more importantly, clearly connecting the literature to the various aspects of this project. A contextual review of the literature is imperative to situate this research, especially given its interdisciplinary nature, spanning the fields of education, psychology, marketing (in particular, consumer behavior), and information studies. The topics and themes included in the contextual review fit together as a representation of the various conversations that can be linked to college search and decision making, and reveal possible gaps to be addressed by this study.

After the contextual review, the theoretical literature will be reviewed, hopefully thoroughly but not exhaustively, since some of the theory embedded in this project (e.g. self-efficacy) is well established and pervasive in research across multiple fields. The review of theory is intended to set the stage for the research question and hypothesis development detailed in *Chapter Five*.

Review by Topic or Theme

Consumer behavior and consumer confusion

The literature review for this project began in consumer behavior, and quickly led to exploration of the notion of 'consumer confusion'. Choice of a college

is the first important consumer decision that most high school students have had to make, possibly independently or with the support of their parents. There are a multitude of choices in what could be considered a cluttered market, the 'product' is extremely complex, and the 'sellers' may or may not have the students' best interests at heart (e.g. for-profit institutions with low graduation rates). Walsh et al. (2007) characterize consumer confusion as a conscious condition or state that individuals can be prone to experience, that negatively affects information processing and decision making. As is noted by Mitchell and Papavassiliou, consumer confusion "can be particularly acute in high involvement and complex purchases where consumers devote more time and effort to gathering and processing information and have a higher propensity to become overloaded. However, the consumer is not protected against information overload and the law currently gives no consideration to information overload as a consumer issue" (1999, p. 319). Unfortunately, the student who makes the 'wrong' decision has no recourse to a refund. Some might argue that league tables (or 'rankings' as they are known in the US) are a possible solution to reduce consumer confusion and resulting anxiety, for example, by arming students with information on admission statistics and thereby increasing their perception that they are in control of the process (Bowman and Bestedo 2009). However, rankings are fraught with inconsistencies and even could be misleading if the data feeding into them is manipulated or inaccurate (for example, lacking correlation between overall status of an institution and a particular department) (Drummond 2004, p. 320). To make matters worse, "Confused consumers are more likely to misinform others and spread inaccurate or irrelevant information by word-of-mouth" (ibid., p. 318). In this age of social media, this misinformation can have great reach. To counteract this consumer confusion, Drummond (ibid., p. 322) suggests that HE institutions, beyond being more aware that their 'consumers' are confused, should: avoid hyper-segmentation of their programs, take advantage of their customer facing staff (e.g. admissions officers, advisors) to reduce confusion, and focus on educating the consumers who may become their students by more clearly illustrating the features and benefits of their programs and even offering them 'trial sessions'. This literature on consumer confusion suggests that merely providing

more information about college may not be the solution to help students make college decisions.

Is college choice a "rational" process?

Surprisingly, given how the researcher has witnessed firsthand the desperation of college administrators fighting over a shrinking pool of prospective students (mainly due to demographics, but also impacted by the current economy), there is not an abundance of research focused on student decision making and college choice. College choice models span theoretical approaches grounded in economics, psychology, sociology, and information sciences. Pure economic models presume that students are rational actors, acting in accordance with their own preferences. According to the economic view, students will naturally maximize utility; but yet not all students will derive the same utility or value from higher education when they engage in their cost/benefit analysis. Some of the economic models are those of Kotler and Fox (1985) and Hossler et al. (1999); the Hossler model recognizes that students may have less than perfect information. DesJardins argues that it is not necessary to have accurate information in order to act rationally:

> "While having inaccurate or incomplete information may affect a student's decision, the decision would still be rational provided that it was based on a reasoned reaction to the information available to them at the time they made the decision. Thus, it is not necessary that a student have perfect information regarding the future income streams from different institutions in order to make a rational decision. All that is required is that the person be able to form estimates of these income streams and act in a manner that is consistent with their calculations and preferences" (2002, p. 218).

Despite this disclaimer, there are many who doubt that the pure economic models sufficiently address the complexity of the average student's cognitive and information gathering abilities. This is where Simon and the other behavioral psychologists step in, since as Simon observed, "...the theory of decision making

has become a natural meeting ground for psychological and economic theory" (1956, p. 129).

Menon confirmed the above assessment with her examination that used information search as an indicator of rationality in her study of college students in Cyprus, finding that "information search among students contemplating the choice of a higher education institution is less than what we would expect under traditional economic theory. In our sample, slightly less than one-half of respondents could be described as information-seekers" (Menon 2004, p. 279). "Information search" in this study included visiting a college campus and/or requesting information from a college. Menon also notes that while some students may collect information, it is possible that they will not use it in their decision making, as subconscious feelings and values may intervene. Further, she found a connection between socioeconomic status and the likelihood that a student would engage in information search – low socioeconomic students were more likely engage in search. Menon speculates that this could be due to the higher financial risk for these students. Taking a critical view of Menon's linkage between the level of information search as a proxy for rational decision making, and considering students' individual decision making style as maximizers or satisficers, what could be considered a rational level of information seeking for a maximizer could be different than that for a satisficer; a satisficer, for example, may find it perfectly rational to visit a couple of colleges and 'call it a day' before making her/his decision on where to apply to college.

In *Higher Education and Consumer Choice* (2015), Hemsley-Brown and Oplatka also argue that college decision making is often irrational: "It is important to stress that HE consumer choice decisions are frequently not economically rational decisions, and many students will not go through a comprehensive search for information and evaluate their search findings" (Hemsley-Brown and Oplatka 2015, l. 2292). Further, they note that "Different segments of students deal with information searching in different ways" (ibid., l. 1938) and conclude that higher education is a unique sector that merits its own targeted consumer behavior study. This is an accurate assessment in that one must dig deep and wide to examine the

decision factors that are influencing students' college decision making, and determine how rationality is defined for students *on an individual level*. The cost of tuition or future income potential are not of equal importance for all students. Let us assume, for a moment, that students are also seeking higher education to expand their minds, which may mean that a technical college with promising career outcomes but lacking a rigorous curriculum would not be a good fit. Or maybe a student values being close to her or his family to the extent that s/he does not wish to go to school far from home. Of course students who think this way are actually 'rational' when their own individual criteria or values are factored into the modeling.

College choice models

Status-attainment models take a sociological approach, and consider variables such as the social status of parents (Sewell and Shah 1968). These variables are incorporated into some of the combined models, such as those of Jackson (1982), Hanson and Litten (1982), and Chapman (1984). More recently, Vrontis et al. (2007) attempted to combine these three models into a comprehensive 'generic' model applicable to developed countries, which includes factors such as student characteristics, high school characteristics, influences/media used, personal attributes, environment, college characteristics, public policy, and college actions.

From the researcher's perspective, Chapman's model of the college selection process provides a straightforward, albeit linear, framework that is helpful in illustrating the level of analysis for this particular project:

Figure 2: Chapman's Model of the College Search Process

Pre-Search Behavior → Search Behavior → Application Decision → Choice Decision → Matriculation Decision
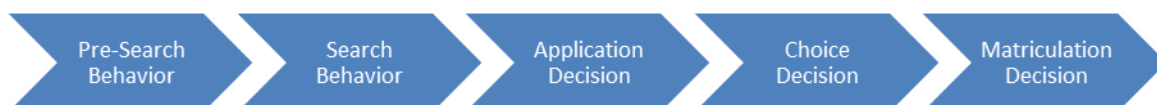
According to Chapman, the ideal time to study the search stage of the process is during the search: "While retrospective studies of choice may represent reasonable

compromises between cost and data accuracy/generalization considerations, search behavior cannot be studied successfully with retrospective study designs" (1986, p. 249). His advice influenced the design of this study; rather than survey students about their college search experiences after the fact, the data collection occured in real time as they were conducting their college search.

With respect to timing, Hemsley-Brown and Oplatka (2015) note that "Timing – when students make choices – is an important aspect of HE consumer choice behavior, which is not widely researched…" (l. 208). While this study is not particularly focused upon determining when students complete certain tasks in their college research, it will provide some insight into the amount of progress that students have made in their college research at a certain point in time, given that the high school juniors and seniors completing the online survey were asked to report upon how many hours they had spent researching their college options.

Another model similar to the Chapman model is the Stimulus Response Model of the HE consumer behavior process (Hemsley-Brown 1999; Kotler et al. 2014), diagrammed below in Figure 3:

Figure 3: Stimulus Response Model of the HE Consumer Behavior Process
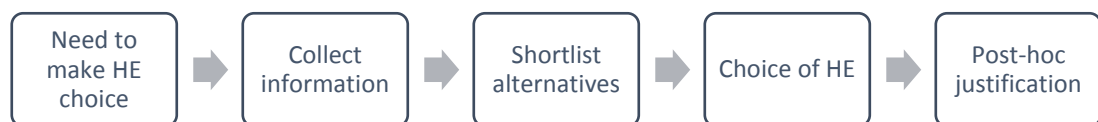
A weakness in the Chapman and the Stimulus Response models could be their linearity. The college choice process is like a puzzle with many moving parts, and there are more sophisticated, nuanced models that acknowledge and incorporate the many facets of college decision making (e.g. the HE Choice Model of Vrontis et al. 2007), both personal and environmental. One of these is the Black Box model proposed by Hemsley-Brown and Oplatka (2015), based on Kotler et al. (2014), as depicted below in Figure 4:

Figure 4: Higher Education Consumer Black Box Model

THE ENVIRONMENT		BLACK BOX		CONSUMER'S RESPONSE
Globalisation	→	Student Characteristics	→	Consumer's attitude to institutional factors
Internationalisation		- Personal		Preferences for institutional characteristics
Supply & demand		- Social		Type of program
Competition		- Cultural		Mode of study
Economic		Consumer behaviour process		Length of study
Technological				
Social & political				
Marketing communications				

Hemsley-Brown and Oplatka admit that this new Black Box Model (2015) that they propose, a revision of an original Kotler and Armstrong version employing the 4Ps and skewed towards external market influences (Kotler and Armstrong 2013), does not account for searching behavior, and the selection of a preferred option. Rather, it is designed for managers of consumer behavior and marketing, not for students, the consumers of higher education (2015, l. 2251). However, this model does present an opportunity, since its "Black Box" contains the phenomena, student characteristics and the consumer behavior process, that will hopefully be illuminated by this study – in particular, the interrelationship between student personal characteristics (maximizing or satisficing as a personality trait; self-efficacy) and college choice behavior. The psychological processes are currently hidden in the Black Box, and this research may reveal them, or at least some of them.

Heuristics

According to Kahneman, a heuristic is "…a simple procedure that helps find adequate, though often imperfect, answers to difficult questions. The word comes from the same root as *eureka*" (2011, p. 98). Heuristics are the mental short-cuts that people use when making decisions since they are unable to meet the conditions for optimal reasoning, rationality, and perfect information. There are

many other definitions, and another is provided by Gigerenzer and Gaissmaier: "A heuristic is a strategy that ignores part of the information, with the goal of making decisions more quickly, frugally, and/or accurately than more complex methods" (2011, p. 454). In his popular book *Blink*, Gladwell describes how our implicit or unconscious associations, a type of heuristic, can cause us to engage in racist behavior or discriminate against short people in the hiring process (2005, pp. 86-87). Another example of a heuristic that relates to consumer behavior and college choice is recognition; simply being familiar with a brand increases the probability that it will be chosen. There is also the 'take the first' heuristic, which is what is a person does when they are asked to recall options and they pick the first one that comes to mind. These are just a few of the many types of heuristics used in decision making. Simon's theory of bounded rationality/satisficing (1956), to be described further on in this literature review, is in essence a heuristic.

Decision satisfaction and quality decision making

The mostly unquestioned assumption underlying the college choice process is that the end goal is a student who is satisfied with his or her decision. Of course, satisfaction is difficult to define, since it is a multi-faceted construct incorporating individually-determined decision criteria (e.g. if the student sought a college that promised small class sizes and a high level of faculty/student interaction, was that promise fulfilled from the perspective of the student?). A college graduate may place differing value upon the college experience, the knowledge gained, and career outcomes; what a student values during the college search phase will likely shift as the student moves along in her/his college experience and then graduates. Kmett et al. (1999) conducted an experiment related to this topic, beginning with a group of 101 high school seniors that shrank to 60 students for the second session one year later, placing students into three groups: one group worked through a career exploration computer program that categorized schools based on the criteria the students selected; the second group received a paper questionnaire that asked them to consider criteria and use a pro/con methodology to rank their choices; and the third control group did not engage in either of these activities. In the follow up phase of the experiment, students were also asked to recall the bases

of their college decision. Kmett et al. found that both types of decision aids, which compelled students to consider the bases for their college decision, resulted in a higher level of satisfaction with their eventual college choice, for those students who did not begin the experiment with the bases, or criteria, for their decision already identified. There was no effect for the students with pre-defined criteria, likely since they had already given serious thought to the issue and knew what they wanted. Kmett et al.'s study was inspired by an experiment run by Wilson and Schooler (1991) which found that college students asked to reflect upon the criteria for their course selections shifted the weight that they had previously given to the same criteria; they changed their reasons when forced into introspection about their decision.

Input from others to develop sound decision making criteria could be considered a component of quality college decision making leading to student satisfaction. However, as noted by a student in a study on choice of academic program described by Nixon, Scullion, and Molesworth (Nixon et al. 2011, p. 202), collecting input from a tutor, for example, could complicate the decision making process too much, by adding in more, unwanted criteria. In other words, why make a difficult decision even more difficult? Nixon et al. conclude that increasing choice in HE can encourage students to make more conservative choices:

> "Here then we see choice as angst-ridden and 'joyless'. Some dealt with this potentially contradictory and anxiety-ridden circumstance by ensuring they used choice to stay within their 'comfort zone' and spoke of being 'relieved' when a decision was made. Others were keen to abdicate responsibility that came with pedagogic choice which triggered disquiet, or even hostility" (ibid., p. 201).

Schwartz agrees that students who go through a process of carefully weighing their options, assigning scores, etc. accept a certain degree of risk and may overcomplicate the process:

> "Since this process is not unlike flipping a coin, it is also hard to judge the accuracy of your probability estimates, which themselves

may be wrong. And the situation is more complex still. You may be
wrong about how important field biology, social life, and location
are to you. You're only seventeen, after all, and people
change…Even if your estimates of importance and quality are
correct, you don't know how it will actually feel to experience being
a student at a school that has the qualities of the one you
choose…You are making a prediction about a future subjective
state…" (Schwartz 2010, p. 211).

Schwartz redirects the prospective college student seeking "the best" choice to
instead set a goal of maximizing confidence in an acceptable outcome, i.e. to
engage in "robust satisficing" (also known as "info-gap" decision making). He
provides the example of a student interested in studying molecular biology, trying
to decide between two well-respected institutions, University A with three relevant
biologists and University B with just one. A also has the option of other programs
that interest the student in case s/he changes her/his mind. In this scenario, A
would be the robust satisficing choice since it leaves the students with options
should a faculty member leave or the student decide to change her or his area of
study. Reflecting upon Simon's theory of satisficing, Schwartz notes that while
Simon was focused on the processing limitations of organizing, robust satisficing "is
focused on epistemic uncertainties inherent in the environment in which decisions
get made" (ibid., p. 219). While Schwartz's argument in support of robust satisficing
is convincing - it minimizes risk, it has psychological benefits, it may result in
objectively "better" decisions - it does fail to address maximizing as a trait that can
be measured. If someone is a "psychological maximizer," can s/he be guided to
behave as a satisficer? While this question will not be answered directly by this
study, it is a question that is of interest in conjunction with the recommendations
made herein.

In their examination of choice in the context of a student as consumer
environment, Nixon et al. propose that educational decision making should not be
a painless process: "Attractive educational choice for students is choice that makes
things easy or pleasant, but attractive choice for education is choice that requires

reflection, complexity, challenge and therefore often the sort of dissonance and angst that good marketing usually works hard to eliminate" (Nixon et al. 2011, p. 207). They also argue that limiting student choice, for example by requiring students to apply to their academic programs/majors, could help students become more reflective decision makers. Obviously, for college admissions in the US, this system already exists to the extreme and it is not clear that it has the impact of making students more reflective. Many students have a difficult enough time coming up with their college search criteria; adding in value judgements that label their criteria as too consumerist or vocationalist, focused upon career outcomes and future salary levels, does not seem to be productive or supportive of their decision making process. The more pertinent and meaningful question to ask students, perhaps best posed by a high school guidance counselor, is whether the criteria they are using are in fact their own criteria, and not those of their parents or their peers. High school students should be encouraged to take charge of their own educational choice.

Additionally, time-stress can potentially decrease decision quality. Mick et al. note that according to prior research (Ariely and Zakay 2001; Payne et al. 1993) time-stress:

> "…reduces information search and processing; reduces the range of alternatives and dimensions considered; increases valuation of negative information; bolsters the chosen alternative; provokes information filtration strategies; increases the probability of non-compensatory choice strategies; and encourages poor judgment and evaluation" (2004, p. 208).

Many high school students are overburdened with extracurricular activities, homework for a demanding course load (especially given the pressure to take more and more AP classes), and part-time jobs and volunteer work (Teare 2015; Thacker 2005). While this study contends that conducting a college search has become more complicated in an information-rich environment, with many different sources of college information, it is possible that technology could also make the process

more efficient and less time-consuming, if students are provided with the guidance and tools needed to navigate an online college search.

Information and choice overload

There are various definitions of information overload that exist in the literature. Eppler and Mengis (2004) provide a review of definitions within organization science, marketing, accounting, and management information systems. The definitions are shaped by the presumed cause of the overload. For example, a lack of time for processing may induce an overload state, as in this definition from an accounting perspective:

> "...information overload is defined as occurring when the information processing demands on an individual's time to perform interactions and internal calculations exceed the supply or capacity of time available for such processing" (Schick et al. 1990).

While quantity of information and the time to process it can be factors in determining information overload, this particular definition is too narrow to be very useful for this study, which posits that information overload is related to the capabilities or characteristics of the person receiving the information as well as the nature of the information.

Rather than strictly define information overload, Bawden and Robinson provide a helpful high-level description of the state: "...information overload occurs when information received becomes a hindrance rather than a help, even though the information is potentially useful" (2009, p. 183). They also discuss that increasing diversity of information may lead to overload, along with quantity, and this is an approach better suited a study focused on digital media. Information can be diverse in the type or nature of the information and the format in which it appears.

Napoli's framework of media diversity, in the context of communications policy, identifies three types of diversity: (1) source diversity, (2) content diversity, and (3) exposure diversity (Napoli 1999, p. 10). In Hargittai's (2007) study examining how adult Internet users searched for information about cultural events

online, it was observed that traditional information sources (e.g. online version of local paper) were the most used, despite a high level of content diversity. Hargittai concluded that users' online abilities influenced the types of sources they accessed, as well as well as the organization of the content, user preferences and familiarity. The survey for this research project, which presented the high school participants with a variety of media sources that they could choose to view, or not view, provides some interesting insights into how high school students choose media, somewhat similar in approach to Hargittai's research.

Mick et al. describe the state of information overload in a consumer environment as "hyperchoice" (2004, p. 207); in the higher education example, the student experiencing consumer hyperchoice is making a single choice within an overcrowded, complex product category. Depending upon where a student falls along the continuum of Chapman's college choice model (1986), the level of choice may be more or less; a student is likely to experience more information overload or hyperchoice during the college search process, than that same student will experience later when acceptances or rejections are in hand and the number of options has been winnowed down.

Two meta-analyses (Scheibehenne et al. 2010; Chernev et al. 2015) have questioned and reviewed the research on choice overload or hyperchoice and concluded that studies trying to replicate the jam experiment of Iyengar and Lepper (2000), for example, have failed to reproduce their results (this experiment found that too much choice can be demotivating; participants were more likely to purchase jams when presented with a limited array of options). Scheibehenne et al. note that the negative effects of choice overload in experiments such as this one rely upon some preconditions, including lack of familiarity with, or prior preferences for, the items in the choice set, and no clear prior preferences for the product/item in question. Chernev et al. examined 99 studies related to choice overload and assortment size (i.e. number of items in the choice set) and identified four key factors that act as moderators on the impact of the size of an assortment in the choice overload equation – choice set complexity, decision task difficulty, preference uncertainty, and decision goal. The topic of this study, information

behavior in online college search, is primarily focused upon the proliferation of choice in the media sources used to search for college information, not on the numbers of colleges from which students can choose. That said, the findings of these meta-analyses do highlight the importance of the moderating variables in digital media choice. The same moderators noted in their study could also apply to students picking from a list of media choices in an experiment or exercise like in the survey for this study, or from the vast array of sources available online. For example, students may not have as much difficulty in selecting digital media sources for college information when they have strong website or social media preferences. Digital media as defined for this study is a wide-ranging category of dissimilar items or sources, which could categorize it as a complex choice set.

A final question to consider is whether indeed, information overload even exists. Is it a figment of our contemporary collective imagination? After all, predictions about the negative impacts of electronic information overload first surfaced in the 1970s, when the term was coined by Alvin Toffler in his influential book *Future Shock* (1970), so this state of affairs has existed for nearly fifty years now. Bawden and Robinson speculate that "What is perceived as information overload may more fundamentally be work overload" (2009, p. 187). According to the McKinsey Global Institute (2012) the average "interaction worker" spends an average of 28% of his or her time each week reading and answering email. Surely, the volume of email flowing in, the information overload, is having a direct impact on work overload. There is a body of literature that addresses email management and the impacts on worker productivity and well-being (Jerejian et al. 2013; Sumecki et al. 2011; Szostek 2011) and even research into the connection between personality (examining correlations between managing mail overload and the Big Five and Core Self-Evaluations) and impacts on burnout and work engagement (Reinke and Chamorro-Premuzic 2014). The participants in the focus group for this project spoke of non-stop college emails and expressed a sense of helplessness in dealing with them (many times the answer was just "delete"). Social media overload, on the other hand, is a topic of research that is not yet as deeply researched as email overload. One paper on the topic compares the spread of

popular messages in social media information feeds to a contagion (Feng et al. 2015); the spread is modeled using the same modeling used to study epidemics. Another study questions whether users suffering from information overload should unfriend or ignore Tweets (Sasaki et al. 2016).

Hargittai et al. (2012) conducted focus group research with 77 adults ranging in age from 20s to 60 to explore perceptions of information overload and found that the mood of the majority of the participants was "largely positive and enthusiastic." They report on the participants that "Instead of feeling burdened by choice...many enjoyed the freedom it brought, especially the range of information available online" (Hargittai et al. 2012, p. 165). However, the discussions in their focus groups primarily focused upon online media use for news and entertainment; the participants were not using online media with a specific goal in mind (e.g. searching for college, trying to find the answer to a medical question). Context is significant, as it creates a condition that may or may not encourage feelings of overload. Their research does note that the participants in this study could have expressed positive feelings about the Internet as an outlet for news since they felt in control: "A diversity of sources and a cacophony of video, audio, and textual streams online require audience members to 'pull' what they want, rather than simply sit back and allow the media professionals to decide what is important and 'push' the headlines out to passive audience recipients" (ibid., p. 168). In contrast, modern day college 'search' is clearly more 'push' rather than 'pull'; high school students are bombarded from all directions, online (email, social media, print marketing materials) and in-person (parents, guidance counselors, peers), setting them up to potentially feel quite out of control. Finally, another interesting focus group finding from the Hargittai et al. study is that participants reacted more negatively to the Internet for information when it the quality was perceived as low; they expressed dislike for Facebook and Twitter when they saw what was posted there as fluff or narcissistic.

In summary, while email overload has been a topic of study that is fairly well developed, Internet/social media overload can still be considered an emerging research area. This study contributes to the discourse on the proliferation of media

choice, with the Internet and social media presenting more opportunities for overload than ever before, exploring how those with different decision making styles react to being given multiple sources of information from which to choose.

Information behavior

Since the focus of this project is on information behavior, examining how high school students' behavior is impacted by an abundance of information in an overcrowded marketplace, it finds a comfortable seat in library and information science. There are clear parallels between the process of a student seeking resources for a research paper, for example, and conducting a college search. Kuhlthau (2004) has based her extensive research on her theory for library and information services which combines Dewey's phases of reflective experience, Kelly's phases of construction, and Bruner's interpretive task. The theory she proposed rests upon an Uncertainty Principle:

> "Uncertainty is a cognitive state that commonly causes affective symptoms of anxiety and lack of confidence. Uncertainty and anxiety can be expected in the early stages of the information search process. The affective symptoms of uncertainty, confusion, and frustration are associated with vague, unclear thoughts about a topic or question. As knowledge states shift to more clearly focused thoughts, a parallel shift occurs in feelings of increased confidence. Uncertainty due to a lack of understanding, a gap in meaning, or a limited construction initiates the process of information seeking" (Kuhlthau 2004, p. 92).

Kuhlthau presents six corollaries branching from this principle. In particular, her Process Corollary is useful to understand that information seeking should be viewed holistically, as it is interwoven with thoughts, actions, and feelings that can change throughout the process. She notes that "Information searching is commonly portrayed as a systematic, orderly, and rational procedure rather than the uncertain, confusing process that users commonly experience" (ibid., p. 93). Kuhlthau also posits that moods or attitudes can also shift. Someone with an invitational mood is open to exploring different possibilities, and another person

with an indicative mood knows (or thinks s/he knows) just what s/he is searching for; an excessively indicative mood could lead to forming a research question hastily, choosing information sources too quickly, and running into obstacles later. An indicative mood can be appropriate, even necessary, at the end of a search, though, since it leads to closure. Kuhlthau takes a constructivist stance in her Formulation Corollary by arguing that individuals formulate their thoughts in an information search and process information in a very individual way, based upon how they construct their own reality; individuals are likely to become frustrated when they encounter information that is not compatible with their own constructs. Kuhlthau's theory provides food for thought to further examine why students may act as satisficers or maximizers when seeking information to make college decisions. Her work on intervention in information seeking could provide helpful guidance for future related research on information seeking in college search that could take an action-research approach. In this study, Kuhlthau's theory shaped some of the questions that were asked in the high school focus groups.

Predictive analytics in higher education

The use of predictive analytics in higher education does not have a long history, and HE can be labeled an analytics late adopter; therefore, the literature on this topic is still emerging. HE institutions have only relatively recently embraced analytics for student success and retention efforts, for example, using student data from their data warehouses to create predictive models that provide early warning to academic advisors and instructors about students who are at risk. Though the terminology used by HE to describe the types of analytics being employed is not yet mature enough to be standardized, it can be said that *learning analytics* focuses on the student and learning behaviors while *business (institutional) and academic analytics* allow administrative leadership to measure performance of institution and its units (i.e. colleges/schools/departments) (Barneveld et al. 2012).

Daniel (2015) presents a diagram illustrating the key big data opportunities for three end-user groups in higher education (see Figure 5 below):

Figure 5: Big Data Opportunities for HE
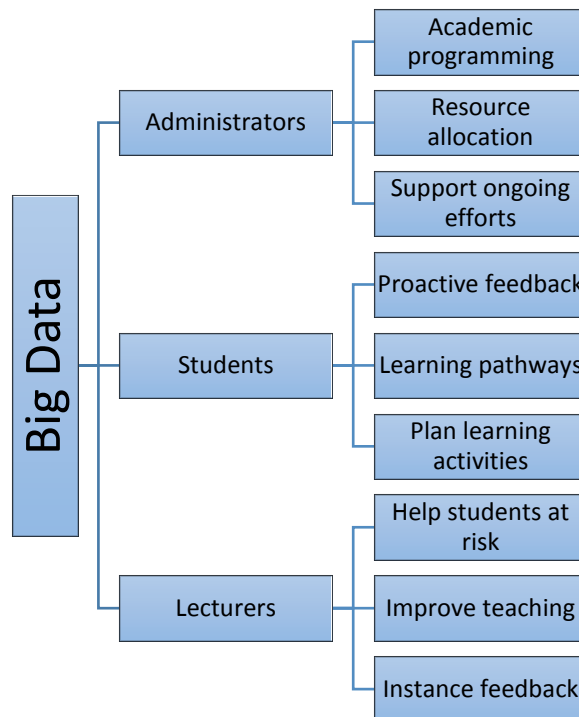
Notably, student recruitment (also known as enrollment management) is absent from this diagram, despite the fact that most institutions should have access to plentiful in-house and external data that they can use to predict which students are likely to apply and enroll. Hobsons, the clear frontrunner in higher education analytics, offers Radius, a CRM that promotes its ability to follow students "throughout their life cycle," enabled by Naviance, its K-12 college and career readiness platform that has gained a high level of traction in the US in recent years. In 2016, Hobsons acquired the Predictive Analytics Reporting Framework, which is "a national membership collaborative, help[ing] colleges, universities, and higher education systems use data to improve retention and postsecondary success" (Hobsons 2016). With this acquisition, Hobsons has made a major move to consolidate its ownership of the US HE predictive analytics market; however, it does have at least one major competitor organization, the Education Advisory Board. The Education Advisory Board, without a K-12 equivalent to Naviance, focuses primarily on HE enrollment management, student success, and growth and academic operations (Education Advisory Board 2016); its student analytics and workflow platform is called the Student Success Collaborative. Both Hobsons and

the Education Advisory Board are organized as "collaboratives," that depend upon and benefit from the collective data inputs of their members to build their predictive models.

IBM's Watson is also gaining a firm footing in HE analytics, offering app developers cognitive computing tools like Personality Insights:

> "Personality Insights extracts and analyzes a spectrum of personality attributes to help discover actionable insights about people and entities, and in turn guides end users to highly personalized interactions. The service outputs personality characteristics that are divided into three dimensions: the Big 5, Values, and Needs. We recommend using Personality Insights with at least 1200 words of input text" (IBMa 2016).

IBM demonstrates on its Watson website how this tool can be used with a sample app, the "NYC School Finder," which instructs parents to cut and paste a sample of their child's writing into the app (IBMb 2016). The app then analyzes the text and produces a list of schools that might be a match based on the child's personality characteristics. Only IBM knows at this point whether applications such as these will be seized upon by HE, or whether they will remain behind the curve for now. A forward-thinking HE institution could use this code to create an app that would offer students a list of potential academic programs fitting their personality type, for example, and that would be an innovative, unique marketing tool.

Another area in which the possibilities appear almost limitless is data mining of social media analytics. A recent *Chronicle of Higher Education* story provides a glimpse into a rapidly morphing college search process:

> "Many prospective students don't wait for official information, which they tend to distrust anyway. They can browse, click, and chat their way to an opinion of a campus without ever glancing at a viewbook or meeting with an admissions counselor. And they often fire off applications to colleges they haven't previously contacted at all. In short, who will apply and who might enroll are increasingly

unpredictable. That complicates life for enrollment leaders, whose ability to meet numerous institutional goals – academic profile, tuition revenue – depends upon forecasts of how many students will show up" (Hoover 2015).

Some institutions are even factoring demonstrated interest into their admissions decisions, but the measurement methods can be elusive. Email is no longer the trackable communication tool it used to be now that inboxes are overflowing with literally thousands of messages and students find it easier, or necessary, to ignore or delete them. In a use not originally intended nor disclosed to students, some institutions have been viewing the full lists of schools to which students have sent the Free Application for Federal Student Aid (FAFSA), using the order of these lists as a surrogate indicator of level of interest (Rivard 2013). Thirteen percent of US HE institutions in a recent social media study reported that they have researched individual applicants using SNS when making their admissions decisions (Barnes and Lescault 2013). There are already savvy HE marketing firms that have well positioned themselves in this market as leaders in "recruitment intelligence," offering software that tracks behavior to score students on their online engagement. Key to this strategy is the ability to match IP addresses of prospective students already identified in institutional databases with the IP addresses of students visiting their website and Facebook pages, for example.

Of course, there are ethical concerns about tracking student interest surreptitiously. In cases where demonstrated interest is being used to make or break a student's admissions chances, it could be considered unfair to students who are too busy to be spending their time on social media or choose to opt out, who probably do not realize that they should be online showing interest, playing the game. And some would say that weaving a tracking web has an air of 'big brother' to it, even though these are the same analytics that students from the Netflix generation should be very familiar with:

> "Even as technology opens doors, it sometimes trips alarms.
> Consumers have more or less accepted that a company will track

their online footprints to display sunglasses and cars that suite their

tastes. Colleges, though, are widely perceived as different, untainted

by profit margins, purer than most businesses. But the increasingly

sophisticated use of predictive data and cyber monitoring in

admissions reminds us that institutions, too, have bottom lines and

fast-evolving ideas about customer service. For all the talk of merit

and achievement, the enrollment equation also includes calculations

of buyer behavior" (Hoover 2015).

Likely, as these practices become more transparent and common practice in HE, students will catch on and adapt to the addition of one more hoop that they must jump through in the college admissions process. They will go online to their first choice college websites and social media platforms, and click, and click, and click...

Given the infancy of social media analytics for HE marketing, there is a distinct lack of empirical research on this topic in peer-reviewed journals, and this study has the potential to help lay the foundation.

Theoretical Development

Maximizing/satisficing

Simon's theory of satisficing (also known as bounded rationality) (1956) has been widely adopted in research focused on decision making, across a range of disciplines. McCain (2015) mined full-text journal articles to count explicit, indirect (not published by Simon), and implicit (using catch phrases without any associated reference) citations of Simon's top works, or the terms bounded rationality or satisficing. Across journals in economics, management, and psychology, over the time period 1987-2011, the total number of citations for bounded rationality was 2,526, and for satisficing, was 784. Clearly, the body of literature examining this theory is vast, and it will be necessary to strictly limit the number of studies mentioned in this literature review to those that are relevant to the focus of this research project.

Simon theorized that the traditional economic models of rational behavior were not sufficient to explain how individuals act in choice situations. Rather, he

argued, "…it appears probable that, however adaptive the behavior of organisms in learning and choice situations, this adaptiveness falls far short of the ideal of 'maximizing' postulated in economic theory. Evidently, organisms adapt well enough to 'satisfice'; they do not, in general, 'optimize' " (Simon 1956, p. 129). In his original work exploring his theory, Simon explained that the process of satisficing involves adjusting and readjusting aspiration levels based on the availability of alternatives:

> "Let us consider, instead of a single static choice situation, a sequence of such situations. The *aspiration level*, which defines a satisfactory alternative, may change from point to point in this sequence of trials. A vague principle would be that as the individual, in his exploration of alternatives, finds it *easy* to discover satisfactory alternatives, his aspiration level rises; as he finds it *difficult* to discover satisfactory alternatives, his aspiration level falls" (Simon 1955, p. 111).

In addition, satisficing, or acting within bounded rationality, recognizes the limits upon individuals when making decisions, including time constraints (imposed and self-generated) and cognitive constraints (information overload, textual overload, and outcome overload).

In her research on young people's web-based decision making, information science researcher Agosto (2002) tested Simon's theory of bounded rationality/satisficing. The students in Agosto's study engaged in a Web surfing exercise about females in STEM professions, and were assigned three science and technology websites to visit followed by some time for free surfing. For example, one student strategy to deal with textual overload included using sites with more graphics and less text. Agosto also found that study participants used reduction methods to satisfice; for example, they returned to known sites, began their searches at known points, and used skimming to evaluate a site's contents. Of course, the most obvious sign that a student was satisficing was terminating her search. In addition, beyond acting within limits of bounded rationality, Agosto

found that students also experienced physical constraints, in the form of actual discomfort from excessive web use. Agosto's research provides a very useful framework that has guided this project's design; while my research was not conducted in a lab setting, using physical observation, the media viewing exercise embedded in the online survey attempted, albeit to a limited extent, to simulate Agosto's method of analyzing online search behavior and looking for signs of maximizing or satisficing.

Schwartz et al.'s research presenting a proposed Maximization Scale (2002) was published prior to *The Paradox of Choice* (2004), after some initial theorizing by Schwartz on self-determination as the "tyranny of freedom" given that perfect information is a myth and increased choice can pose an "intractable information problem" (2000). He cited the Iyengar and Lepper jam/chocolate study (2000) amongst other examples. Per Schwartz et al. (2002), someone who aims to maximize outcomes in a particular domain is not only overwhelmed by the addition of options in a decision making scenario but further, experiences something akin to decision paralysis (and post-decision regret once s/he gives up and chooses), compared to a satisficer, who can accept "good enough" as a decision outcome. Schwartz et al. took Simon's theory a step further by providing a means to measure how individuals differ in their propensity to maximize or satisfice – a Maximization Scale. In this initial study, which also tested a Regret Scale, Schwartz et al. administered the Maximization Scale and then classified the maximizers as those who scored in the top third of the scale results, and satisficers, in the bottom third. Some of the key findings, aside from scale validation and confirmation of individual differences, were correlations between maximizers and less life satisfaction, happiness, optimism and self-esteem, and significantly more regret and depression, compared to satisficers. Additionally, maximization was found to be a predictor of product comparison, social comparison, and post-purchase regret. Finally, most relevant to this study, Schwartz et al. speculated that "…because satisficers are satisfied with a major, school, or job that is simply "good enough," they may not require as much information in general – and social comparison information in

particular – as do maximizers in order to make decisions" (Schwartz et al. 2002, p. 1190).

The theory of maximizing behavior (Schwartz et al. 2002; Schwartz 2004) has been studied in different domains including but not limited to: job search (Iyengar et al. 2006), online shopping (Chowdhury et al. 2009), choice of college major (Leach and Patall 2013), search engine use (Oulasvirta et al. 2009), and healthcare (Wood et al. 2011). Maximization theory and the 'paradox of choice' (i.e. information or choice overload) have also been employed to explain decision making behavior and phenomena such as post-decision regret/counterfactual thinking and dissatisfaction (Dahling and Thompson 2012; Dar-Nimrod et al. 2009; Leach and Patall 2013; Levav et al. 2012), and the sequencing of decisions (Levav et al. 2012).

Two recent studies, by Dahling and Thompson (2012) and Leach and Patall (2013), explored maximization in the context of academic and career decision making. Controlling for perfectionist striving, Dahling and Thompson (2012) hypothesized that maximization would correlate negatively with academic major satisfaction and perceived fit with academic major, and positively with turnover cognition (i.e. thoughts and plans about switching majors); these hypotheses were supported. For some reason, Dahling and Thompson state that the Maximization Scale they used (the Schwartz et al. 2002 scale) consisted of 10 items, not 13 items as are in the original scale; apparently they opted to not include all of the scale items, but they do not explain why. Leach and Patall (2013) took a similar approach, predicting that maximization would predict major satisfaction, with counterfactual thinking as a mediator variable; as well, they controlled for major college (applied arts, liberal/fine arts, and natural sciences). Interestingly, they found that the applied arts students appeared to experience fewer counterfactual thoughts (perhaps since they are more intrinsically motivated to succeed than other majors), and that maximizing and upward counterfactual thinking accounted for 50% of the variance in satisfaction. An earlier study by Iyengar, Wells and Schwartz (2006) examined whether maximizers experience lower job satisfaction, despite submitting more job applications, considering more options, than

satisficers. These studies encourage future research that could examine how maximizing behavior during college search could predict satisfaction with college choice post-matriculation and post-graduation.

Another question about maximizing behavior that merits examination due to its relevance to this study is whether it is domain specific or stable across situations. Iyengar et al. (2006) note in their study related to job satisfaction that:

> "Although we treated maximizing tendencies as a global individual difference measure, it may well be that maximizing strategies to find the best are simply a set of learned behaviors or search strategies designed specifically for decision-making tasks, and not necessarily even all decision-making tasks. In fact, mediation analyses demonstrated that individual differences in maximization tendencies were explained by differences in option fixation and reliance on external sources of information" (Iyengar et al. 2006, p. 148).

In fact, Iyengar et al. found that the means of anticipated job applications for maximizers and satisficers who attended top-15 ranked universities were the same, while the means differed for students not attending top-15 universities, with maximizers predictably expecting to submit more applications. Could this result be an indication that maximizing is a learned behavior that students who attended the top-15 institutions adopted within a specific domain, job search? In this same vein, it may be the case that students in high-achieving college preparatory high schools are coached to submit more college applications; they may be doing so not because they are maximizers, but rather due to their desire to do as they are coached and follow the lead of their peers.

Appelt et al. (2011) suggest that there should be a more systematic approach to the study of individual differences in judgment and decision making research, and offer researchers one potential solution to work towards more coordination and sharing of results - the Decision Making Individual Differences Inventory (http://sjdm.org/dmidi/), a freely accessible database that catalogs the

wide variety of instruments and scales measuring individual differences. In their categorization, maximization scales (including Schwartz et al.'s 2002 Maximization Scale) are measures of decision making style, as opposed to approach or competence. Additionally, Appelt et al. call for "a shift toward theoretically relevant measures" and "a shift from a search for direct effects of individual differences to an examination of individual differences in interaction with decision features, situational factors, and other individual differences" (Appelt 2011, p. 256). Linking maximization tendency and college choice in this study is a theoretically-sound approach; educational choice (e.g. choice of major, choice of college) is called out by Schwartz et al. as an example of a relevant domain for examination of maximizing behavior (Schwartz 2000; Schwartz et al. 2002; Schwartz 2004; Schwartz 2010). However, despite this, the extant research has only weakly responded to this cue (Dahling and Thompson 2012; Leach and Patall 2013). This study is also a nuanced examination of maximization in college search in that it does not examine just this one construct in a vacuum, as it also incorporates the effects of self-efficacy, which could be considered a competency difference, and information overload as a situational factor.

Chang et al. (2011) studied perfectionism in the psychosocial adjustment of college students, using an inventory of perfectionism that was multifunctional, including adaptive and maladaptive facets of perfectionism. Interestingly, they found that "maximizing does not appear to be a sufficient marker of perfectionism" (Chang et al. 2011, p. 1077). However, this study does lead one to wonder whether maximizing tendency might be maladaptive, similar to perfectionism, especially when it comes to searching for college information online.

As was mentioned previously in this literature review (see the section on *Information and choice overload*), some studies have disputed Schwartz's and others' contention that more choice makes it more difficult to make decisions (Scheibehenne et al. 2010; Chernev et al. 2015). In a PBS Newshour interview (Schwartz 2014), ten years after the publication of *The Paradox of Choice* (2004), Schwartz revisited how his theory of maximizing has been tested and discussed the

tendency of the general public to rush to completely discount a theory without recognizing that it is the role of science, of researchers, to test and critically examine theory; the result of this process is sometimes the rejection of a theory, but often it is a refinement of a theory. In this spirit, this study seeks to do just that, and further, to attempt to put Schwartz's theory into practice by applying it to the specific domain of college search.

Self-efficacy

In Bandura's view, self-efficacy is the foundation of personal agency: "Unless people believe that they can produce desired effects by their actions they have little incentive to act or persevere in the face of difficulties. Whatever other factors serve as motivators, they are rooted in the core belief that one has the power to produce changes by one's actions." (Bandura 1999, p. 28). Self-efficacy "refers to context-specific, personal beliefs about an individual's capabilities to perform particular behaviors or courses of action" (Brown and Lent 2006, p. 204). An individual's sense of self-efficacy impacts many domains of life, including personal relationships, career, learning, and even health (e.g. weight loss and exercise as a path to better health). Self-efficacy beliefs are dynamic, and linked to particular domains (ibid.). The range of studies examining self-efficacy in different domains is too broad to address in this literature review. However, it is of note that in 1999, Bandura predicted that searching for information in an environment of electronic information overload would rise in importance as a societal issue and require a "resilient sense of efficacy":

> "Inquirers face an avalanche of information in innumerable sources
> of varying reliability. The information is not only difficult to evaluate
> and quantify, but it is hard to know whether one is even on the right
> track. Small changes in search strategies can lead down radically
> different information paths with a lot of wasted effort in non-
> productive searches. The task can quickly become overwhelming.
> Compared to inquirers who approach knowledge construction by
> this means with self-doubt, those with a high sense of self-efficacy
> make better use of strategies that provide both breadth and depth

of inquiry, waste less time in missteps and redundancies and gain greater knowledge. Guided mastery experiences build perceived efficacy and skill in electronic inquiry" (ibid., p. 30).

Self-efficacy can be considered a predictor of actual behaviors (Bandura 1986), and therefore is a valuable construct used in research in various fields beyond ICT. Curiously, even though Bandura made his forecast over fifteen years ago, the study of self-efficacy in the realm of Internet and social media use is still relatively nascent, with a lot of possibility for future study.

Joyce and Kirakowski (2014) note that some early self-efficacy scales measuring confidence in using the Internet were developed without following Bandura's prescribed methodologies of measurement; they used Likert scales instead of scoring on a 0-100 self-rating interval scale (Eastin and LaRose 2000; Torkzadeh and Van Dyke 2001), which may inform more about the respondents' agreement or disagreement with the statements in the scale than about their confidence in using the Internet. Joyce and Kirakowski further critique these scales for their imprecise wording of scale items, for example, focusing more on confidence with computer hardware than actual Internet use. Joyce (2011) has also studied the relationship between frequency of Internet use and self-efficacy, finding (in a study with a small sample of 140 students) that those who frequently completed Internet tasks tended to rate themselves as more confident in those tasks.

Tsai and Tsai (2003) also used a Likert scale for the six-item Internet self-efficacy instrument that they developed and administered to 73 college freshmen in Taiwan, examining how Internet self-efficacy related to their ability to search online for information to complete a Web-based science learning task. Students were asked to think aloud, saying what they were doing and thinking while completing the information task in a lab; their verbalization and motor activities where then analyzed and scored against the following criteria: control, disorientation, trial and error, problem solving, purposeful thinking, selecting main idea, and evaluating information (Tsai and Tsai 2003, p. 45). The findings of this

study indicate that students with high Internet self-efficacy tend to have better information searching strategies. In addition, the researchers found a positive relationship between Internet experience and Internet self-efficacy, as would be expected per Bandura's research (1997).

In a follow up study using a modified version of their Internet self-efficacy scale, Tsai and Tsai (2010) investigated gender differences in 936 junior high school students' Internet self-efficacy. This modified scale is two-dimensional, with nine items categorized as explorative (E) or communicative (C) Internet self-efficacy:

- Keying in a URL in a web browser to open a specific website (E)
- Reading messages in online chat rooms or discussion boards (C)
- Clicking a hyperlink to open another webpage in a web browser (E)
- Making a nickname for myself in online chat rooms or discussion boards (C)
- Using keywords to search for information on the WWW (E)
- Responding to others' questions in online chat rooms or discussion boards (C)
- Reading the content of information provide in a website (E)
- Presenting ideas in online chat rooms or discussion boards (C)
- Download information or materials provided on a website (E)

While Tsai and Tsai's research did not point to a difference between genders on scores for the overall scale or the exploration dimension of the scale, a significant gender difference was evident for the communicative dimension: females scored significantly higher than males, holding more confidence regarding Internet communication. However, Tsai and Tsai note in their conclusion that this difference could be explained by girls' higher level of experience/time spent communicating online.

Hargittai and Shafer (2006) also studied Internet skill and self-efficacy gender differences, but without the creation or use of a self-efficacy scale. After the participants in their study completed an Internet search exercise that was observed by the researchers, with skill (able to complete the task or not) measured

as binary, the 100 adults in their sample were asked how they rated their own Internet skills, using a five-point Likert scale. They found no difference between genders with respect to researcher-rated skill, but did note a difference the means between the self-ratings, with women assessing themselves as less proficient in Internet use. Use of a multi-item existing Internet self-efficacy scale for a study such as this would have yielded richer data on the types of activities on which females rate themselves lower.

Peng et al. (2006) used an Internet self-efficacy scale that contained items relating to general self-efficacy and communicative self-efficacy in their large study of 1417 university students, which also surveyed these students' perceptions of the Internet. Interestingly, but perhaps not surprisingly given that more males play video games online, they found that "male students tended to perceive the Internet as a toy, while female students tended to perceive the Internet as a tool" (Peng et al. 2006, p. 83). Additionally, the students who perceived the Internet as a toy scored higher in communicative self-efficacy. Peng et al. do not appear to have included a question asking about how much time the participants spend online, and this oversight leaves one wondering if those who view the Internet as a toy also spend more time online; based on their results, one might infer that if they do spend more time online, that time did not contribute to building their general Internet self-efficacy.

Hocevar et al. (2014) broke new ground by introducing the concept of social media self-efficacy, noting that users may be efficacious in one domain, the Internet, but not in another, social media. In particular, they sought to study how social media self-efficacy might influence how users' evaluate information online, as credible or not. Hocevar et al.'s findings suggest that users with higher social media self-efficacy tend to find information from social media more trustworthy, in comparison with offline information, especially in the domain of product information (as opposed to health and news information). A possible explanation for this outcome could point to the role of experience and familiarity in influencing mastery. Hocevar et al. note that their finding that product or commercial information was the most trusted type of information contradicted previous

research. In the domain of higher education, findings such as these spark interest in investigating whether high school students who are more efficacious in searching for college information online might trust the information they find more, or less. Additionally, are students with higher self-efficacy better able to navigate and distinguish between media sources that offer more student-generated content, such as CollegeConfidential.com? And would such ability influence their media preferences? These are a few of the questions addressed by the hypotheses and research questions detailed in *Chapter Five*.

Media richness and media choice

Daft and Lengel (1986) developed media richness theory (MRT) to address whether the modality of a message affects a receiver's ability to process a message (i.e. understand the meaning of the message and incorporate it into a mental model). A medium's "information richness" can be defined as "the amount of information a medium could convey to change the receiver's "understanding within a time interval"" (Robert and Dennis 2005); media with a high level of richness engage recipients with a greater number of sensory modalities and involve feedback, multiple cues, natural language and personal focus (Timmerman and Kreupke 2006). Rich media can contribute to cognitive overload.

MRT was not developed to explain media choice, but rather, media effectiveness. To help explain media choice, Robert and Dennis drew from MRT to develop a media classification model incorporating social presence that they call the "paradox of richness," theorizing that "a high degree of social presence in rich media may aid in the communication of simple ideas but hinder the communication of complex ideas" (Robert and Dennis 2005, p. 10). The recipient of a message must be motivated to process it, and this motivation can be linked to the social presence level of the medium of the message:

"In general, the greater the social presence of the media, the
greater the degree of commitment the receiver has to make to
participate in the communication process. The cost to use a
medium ranges from relatively high, when individuals must obligate

themselves to a specific location and time, to relatively low, when individuals are not obligated to any specific location or time" (ibid., p. 14).

Figure 6 below depicts the Robert and Dennis (2005) model, which appears rather dated with the media sources it includes, even though it was developed only ten years ago, light years ago given the rapidly changing media landscape. To make this classification system relevant to this discussion of online media, I have updated and modified the model, inserting some of the media types examined in this project, and these are italicized.

It is recognized that my categorization of some social media platforms as moderate social presence media, placing them in the Diff. Space/Same Time bottom right quadrant, instead of the Same Place/Diff. Time in upper left quadrant, is imperfect and open to debate. An actively monitored university-sponsored Facebook page could be shifted into the bottom right quadrant, for example; however, it was placed in the upper left since many university-sponsored Facebook pages tend to push out content, then due to lack of active monitoring on the part of university staff, may not be quick to provide replies to student postings. YikYak could potentially be placed in both moderate social presence quadrants, since if a user is actively using it they may be voting up or down Yaks; a more passive user of this application may log in occasionally to look at the Yaks, lurking without doing anything more (in which case this app could be shifted to the upper left quadrant (Same Place/Diff. Time).

Figure 6: Model of Media Social Presence Adapted from Robert and Dennis (2005)

TIME

asynchronous

MODERATE SOCIAL
PRESENCE MEDIA

- Billboards
- *Websites*
- *Online forums (e.g. CollegeConfidential.com)*
- *Social media such as Facebook, Instagram*

Same Place/Diff. Time

LOW SOCIAL
PRESENCE MEDIA

- Email
- Voice Mail
- Memo
- Fax
- *Mail (e.g. letters and brochures)*

Diff. Space/Diff. Time

Same Place/Same Time

HIGH SOCIAL
PRESENCE MEDIA

- Face to face
- Tours and visits
- Formal group meetings

Diff. Space/Same Time

MODERATE SOCIAL
PRESENCE MEDIA

- Telephone
- Video-conferencing
- Online chatting
- *Social media such as Snapchat, Twitter, YikYak*

synchronous

co-located   distributed

PLACE

Adapted from Robert and Dennis (2005)

Reviewing the literature citing the Robert and Dennis (2005) model, it does not appear that others have attempted to update this model to incorporate new media, so my approach is uncontested at this point; this is puzzling given that Robert and Dennis specifically encouraged future research that would take a cognitive psychology approach to studying media choice, especially in light of advances in new digital media (2005, p. 19). Therefore, this subset of my study is admittedly exploratory, an experiment looking at how those with different types of decision making styles (maximizers versus satisficers) choose and interact with media along the spectrum of low to high social presence. Explanation of a proposed relationship is described below in *Chapter Five: Development of Hypotheses and Research Questions*.

Conclusion

The review of the contextual and theoretical literature surrounding this research topic points to obvious gaps in the extant research and exciting opportunities to break new ground.

As is indicated in this review, higher education has generally been behind the curve with respect to marketing and the adoption of new technology that can be used to reach out to students for marketing purposes. Perhaps marketing in higher education is looked down upon as a managerial, non-academic pursuit (Anderson 2008) , or maybe it is seen as giving in to acceptance of a student as consumer paradigm, which is distasteful to some scholars in the field (Nixon et al. 2011). Whatever the case, an examination of the root causes for these sentiments and inaction is beyond the scope of this project. Hemsley-Brown and Oplatka (2015) have been two rare scholars who have ventured into a direct examination of marketing and HE, and they have concluded that HE marketing is a unique field of study that demands more attention. To date, studying HE marketing has involved drawing upon marketing research from other fields, and in fact, the contextual section of this literature review has done just that. For example, one of the big data models presented (Daniel 2015) indicates that use of big data methods for supporting HE marketing is not even considered, rather it is used strictly for academic purposes instead. Given this situation, this study addresses a clear need to build a more substantial body of research that recognizes HE marketing as a distinct area of study. Additionally, the discoveries generated by this research should be useful to those studying marketing in other domains, since social media marketing, in particular, is a new area of research.

This review also points to significant gaps in the theoretical literature. While Schwartz's theory of maximization (2002; 2004) is relatively well established, there are still many domains in which it has not been tested, including college information search and decision making. Bandura's theory of self-efficacy (1986a; 1986b; 1997) serves as an indicator of individual difference that could predict motivation to search for information online; even though there has been some scale development examining Internet self-efficacy, social media self-efficacy and

online college search self-efficacy are relatively uncharted territory. Robert and Dennis (2005) provide a useful theoretical framework that seems to have not been adopted widely at this point, but perhaps this study's updating of the framework with social media examples will serve to revive it.

The following chapter will provide an explanation of the the hypotheses that were drawn from the theories introduced in the literature review, as well as the research questions that are included in this study as a means to explore new research realms.

CHAPTER FIVE – DEVELOPMENT OF HYPOTHESES AND RESEARCH QUESTIONS

Introduction

Following a sequential exploratory design, in phase one of this study focus groups were conducted with the aims of: verifying and enhancing elements of the hypotheses that had been previously developed based on the literature review; guiding the development of the phase two survey; and adding depth and context to the discussion of the quantitative findings of the survey. This mixed-methods design is justified and described in more detail in *Chapter Six: Methodology*. As well, a discussion of the theory supporting the development of each of the focus group questions is provided in that chapter.

Given that there is not extant literature related to all of the facets of this research and that Internet/social media research is still in an exploratory state, the quantitative portion of this project is organized using a combination of hypotheses and research questions, in an approach taken by other researchers of the Internet and social media who have used similar methods and research designs (Correa 2010; Hocevar 2014). It should be noted that the approach of developing the hypotheses and research questions for phase two differs slightly from a traditional deductive quantitative method, since the hypotheses do not flow directly from a set of research questions; the questions are interrelated with the hypotheses, but also stand on their own.

The overarching question of this study - How do high school students engage with multiple information sources as they go about their college search? – guided the development of these hypotheses and research questions. In this study, engagement with information encompasses aspects including: direct engagement with digital media (i.e. sources selected, time spent viewing those sources, clicking around within the sources); preferences (i.e. digital vs. in-person, low vs. high social presence media); and confidence or self-rated capability in online information seeking as it relates to their engagement in the process (i.e. self-efficacy). Each of the hypotheses and research questions is an attempt to approach the overarching

question from a unique theoretical or contextual angle. Following is the background on the development of these hypotheses and research questions.

Maximizing/satisficing and information seeking behavior

Schwartz et al.'s research (2002) focuses on the proliferation of choice and the concept of satisficing, originally developed by Simon (1956). Satisficers approach decision making with a desired outcome that is 'good enough' while maximizers desire the best possible result. The maximization theory of Schwartz et al. (2002; 2004) postulates that in their information gathering, maximizers will need to examine many different options, while satisficers are able to decide with more limited information. The Maximization Scale developed by Schwartz et al. (2002) has been employed in studies that examined the outcomes of decisions, comparing maximizers versus satisficers. For example, as discussed in the *Literature Review*, Dahling and Thompson (2012) found that maximizers were less satisfied with their choice of college major. Iyengar, Wells and Schwartz (2006) investigated whether maximizers would submit more job applications (they did) and would be less satisfied in their jobs (they were). Using a modified maximization scale, Diab et al. (2008) confirmed that maximizers experience more decision regret than satisficers (but are just as happy). These studies were primarily concerned with differences in decision outcomes, not on decision process or information seeking. Therefore, it appears reasonable - and important, given the limited amount of empirical evidence - to revisit some of the original premises of maximization theory, those focused on behavior instead of outcomes, and develop hypotheses specifically focused on predicted information behavior.

Taking a behavioral approach examining young people's web-based decision making, information science researcher Agosto (2002) tested Simon's theories of bounded rationality and satisficing. Bounded rationality refers to the limits upon individuals when making decisions, including time constraints (imposed and self-generated) and cognitive constraints (information overload, textual overload, and outcome overload). The students in Agosto's study engaged in a Web surfing exercise about females in STEM professions, and were assigned three science and technology websites to visit followed by some time for free surfing. Agosto found

that study participants used reduction methods to satisfice; for example, they returned to known sites, began their searches at known points, and used skimming to evaluate a site's contents. The most obvious sign that a student was satisficing was terminating her search. Agosto's research provided a useful framework that inspired the media viewing exercise in this study, which was used to collect data on the quantity of digital media sources viewed, the time spent viewing the sources, and engagement with the sources. Essentially, the first three hypotheses in set one combine the maximization behavior aspects of the theory of Schwartz et al. (2002; 2004), while drawing upon Simon's principles of satisficing in a manner similar to Agosto.

It is of note that a recent study by Dalal et al. (2015) provides some evidence that challenges Schwartz et al.'s theory (2002; 2004) that maximizers will search for more options than satisficers, and that they will spend more time on their search. Coincidentally, the design of the Dalal et al. (2015) study, which asked college students to decide upon a new restaurant they would like to see upon on campus and was formatted as an information board task (Payne 1976), is somewhat similar to the design of the media viewing exercise in the survey for this study. While the Dalal et al. study was published in approximately the same time period in which the idea for this thesis was conceived, it did *not* inform the design or hypotheses of this study; it was only reviewed in retrospect. Using the Maximization Tendency Scale (MTS), a modification of the Schwartz et al. Maximization Scale (MS), alongside the MS, Dalal et al. tested two hypotheses that are relevant to this thesis. The first hypothesis of interest was that maximizing would not relate to the request to see more options. They argued that maximizers do set high standards, but achieving the best option means being strategic, conducting an intradimensional and interdimensional information search; it is not just based on amassing options in a choice set. Secondly, they hypothesized that maximizing would be negatively related to decision time, because maximizers should be more systematic in their search and take less time to search for information. Their findings supported the first hypothesis regarding the viewing of more options, but the second hypothesis regarding time was only supported for

the MTS, not the MS. Given Dalal et al.'s findings, this study becomes even more important as counterbalancing research with a similar population (high school students in this study; college students in Dalal et al.'s study).

The expectation for the fourth hypothesis in this set was that student-to-student, user-generated media might be of greater appeal to students with high tendencies to satisfice, since they may be more trusting of this information and capable of processing it without becoming overwhelmed. As Hocevar et al. (2014) note, people higher in social media self-efficacy are more likely to seek others' opinions. This finding regarding social influence is interesting since it appears to potentially contradict Schwartz's definition of a satisficer as someone who is not compelled to seek out many opinions when making a decision.

H1A: **Maximizers will use more media sources in their college search, when compared to satisficers.**

H1B: **Maximizers will consult college media sources for a longer time, when compared to satisficers.**

H1C: **Maximizers will be more engaged with college media sources, as measured by number of clicks when viewing a media source, when compared to satisficers.**

H1D: **Maximizers will use fewer student-to-student online and social media sources in their college search, when compared to satisficers.**

Self-efficacy and maximizing/satisficing

Bandura notes that with the growth of digital media, students can educate themselves independently, at their own time and pace. While this shift in locus of control allows them to be agents of their own learning, students can face challenges:

"Constructing knowledge through Internet inquiry involves complex self-management. Knowing how to access, process and evaluate the

glut of information is vital for knowledge construction and cognitive functioning. People who doubt their efficacy to conduct productive inquiries and to manage the electronic technology quickly become overwhelmed by the information overload" (2006, p. 11).

The information overload that students potentially experience with a multitude of diverse social media and Internet resources may be more manageable for satisficers, and those who do not tend to satisfice may experience this more acutely and their confidence in their information seeking abilities may be weak.

Kushin and Yamamoto (2010) examined college students' use of online media in the 2008 U.S. election cycle, including both social media and traditional Internet information sources in their analysis. Their research examined the students' political self-efficacy along with situational political involvement, and they did not find that using social media for campaign information was significantly associated with either. They noted that young adults do not necessarily go online to find political information, but rather encounter it incidentally when it is pushed content or included in friends' updates; this observation matched the comments of some of my focus group participants, who reported that they mainly use social media for socializing with friends. Information filtering can be a strategy used in satisficing, and it could be the case that satisficers are more adept at managing the information that has the potential to flow towards them, and feel more efficacious. Additionally, there is some evidence that satisficers may frequently make objectively better decisions than maximizers (Parker et al. 2007).

Tsai and Tsai (2010) studied self-efficacy in Internet use, and their scale was used as a model for developing the scale in this study. Following Bandura's advice that "self-efficacy scales must be tailored to activity domains and assess the multifaceted ways in which efficacy beliefs operate with the selected domain activity," the self-efficacy scale developed for this study combines, modifies, and expands upon the Tsai and Tsai scale to address specifically how students perceive their self-efficacy when searching for college information using Internet and social media sources (Bandura 2006, p. 310).

H2:   Maximizers will rate themselves lower in their self-efficacy in using social media and online media sources to search for college information, when compared to satisficers.

Maximizing/satisficing and media usage

Taking an individual cognitive approach, this study examines how information overload is managed in searching for college information using social media and online. Robert and Dennis (2005) posit that media high in social presence increases *motivation* to process information, but decreases the *ability* to process it; they call this the "paradox of richness." For example, a visit to a college with the opportunity to speak with a student tour guide would be motivating in the decision about whether to apply that a college, but it may be on the other hand be too much for the student to cognitively process for arriving at a decision (at least in real time).

As McLuhan noted in 1967, "Societies have always been shaped more by the nature of the media by which men communicate than by the content of the communication…It is impossible to understand social and cultural changes without a knowledge of the workings of media" (McLuhan and Fiore 1967, p. 8). This observation leads one to wonder: Is social media a good fit between the message and the medium for college decision making, especially for those with low tendencies to satisfice, who may struggle with information overload? Comparisons could be made with other more traditional digital media such as college websites, rankings posted online (e.g. US News and World Report), and user-generated content sites such as Niche.com and CollegeConfidential.com. College decision making is not a simple task and low presence media give the receiver an extended opportunity to process the information: "Media low in social presence enable the received to access the information repeatedly until he or she fully comprehends it" (Robert and Dennis 2005, p. 15). However, in particular, the ability to revisit social media at a later time is difficult due to its transitory and disaggregated nature.

H3: **Maximizers will utilize more media with low-to-moderate social presence for their college search, such as email and print marketing materials (low) and institution-to-student media (moderate), when compared to satisficers.**

Maximizing/satisficing and engagement in college search activities

While there is extant research linking maximizing/satisficing tendency and decision outcomes, as discussed above in connection with the first set of hypotheses, the likelihood of maximizers or satisficers engaging in specific behaviors or activities to research colleges has not been studied. Similarly, the possible linkages between self-efficacy in searching for college information online and the actions taken to research colleges were unknown prior to this study.

Galan et al. (2015) also noted a lack of research on online HE search in their exploratory study on use of social media in postgraduate students' search for programs in Australia. They took a qualitative approach, interviewing students about their experiences using social media for HE search. Their findings confirmed some of the most common SNS used by students searching for Australian universities (Facebook and YouTube), and highlighted that students showed a preference for information on student life and the experiences of other students. In addition, they found that usage of social media was most prominent in the information search and evaluation of alternatives phases.

This study contributes to this growing discourse by offering a quantitative approach that is nuanced in its incorporation of individual differences as a factor in usage of online and 'traditional' resources in college search.

RQ1: **Do the propensity to maximize/satisfice or the level of self-efficacy in searching for college information online relate to the types of college search activities that students are likely to engage in?**

Experience searching for college information and development of self-efficacy

This question rests upon the assumption that high school seniors have been researching colleges for a longer time than college juniors. Continued activity exposure and practice, with positive outcomes, builds self-efficacy, as Brown and Lent (2006) observed in their study of preparing adolescents to make career decisions. However, the timeline for college search may span one to two years or more, depending on when a student starts the process. Receipt of the type of positive feedback and reinforcement that builds self-efficacy will most likely be delayed, when this feedback comes in the form of a college acceptance. Social persuasion also builds self-efficacy (ibid.), so the consistent encouragement of parents and school counselors may be a key component in building self-efficacy in college search. Given these assumptions of self-efficacy, the Self-Efficacy Scores of seniors may be higher than those of juniors.

RQ2: Do high school students become more confident in searching for college information online as they gain more experience doing so?

Maximizing/satisficing and college decision making factors

This is also posed as a question due to lack of research on the topic, and the answer could provide valuable insight into the factors that maximizers versus satisficers find important when deciding upon where they will apply to college. While the data gathered for this question was originally viewed as ancillary, used as the distraction task connected to the media viewing exercise in the survey, it should not be overlooked as it is potentially useful information that could contribute to research in higher education marketing strategy.

RQ3: Is there a relationship between maximizing/satisficing and the relative importance of college decision making factors? Overall, how do the students in this study rank the importance of the various factors?

Maximizing and decisions regarding potential major/program of study

Since the main focus of this project is upon students' decision making with respect to their college choice set, the survey was not specifically designed to gather information on the possible relationship between maximizing/satisficing and selection of major/program of study. However, since one of the initial questions of the survey was, "Have you decided on a potential major/program of study yet?", it was possible to add this investigation into the set of research questions.

RQ4: **Do maximizers take longer than satisficers to decide upon their potential major/program of study?**

Conclusion

The questions and hypotheses described above were developed to shine light upon information behavior in the college search process, and in some cases, predict how students might engage with sources of college information given their individual differences and media preferences. All of the hypotheses and research questions for the quantative phase contribute to understanding of the overarching research question of this study: How do high school students engage with multiple information sources as they go about their college search? The hypotheses stemming from maximization theory seek to explain how students demonstrate their engagement with digital media, measured by views, clicks, and time spent, and assume that there will be individual differences that align with a student's tendency to maximize in his or her decision making. In addition, it is speculated that maximization tendency may also influence the sources of information that students prefer for their college search, and this is reflected in some of the research questions. Maximizers and satisficers may also have different views on the importance of college decision making factors, and these views could relate to how they engage with college information. Self-efficacy theory is incorporated into the hypotheses and research questions to illuminate how engagement with different sources of information might be influenced by a student's self-rated confidence in online college search.

The following *Chapter Six: Methodology* will describe both the research design and methods used to address the research questions and test the hypotheses.

CHAPTER SIX – METHODOLOGY

Philosophy and Approach

It is intended that this research will build upon extant research in the fields of information science, marketing, and higher education, taking a psychological and information behavior approach. The psychology research on information overload focuses more intently on the individual response, as opposed to sociology, for example, which examines it as a systemic or global issue.

The research paradigm for this project is best described as post-positivist, in alignment with Muijs's definition:

> "…post-positivists believe that we should try to approximate reality as best we can, all the while realizing that our own subjectivity is shaping that reality. Rather than finding the truth, post-positivists will try to represent reality as best they can…In contrast to positivists, post-positivists believe that research can never be certain. Rather than focusing on certainty and absolute truth, post-positivist social science focuses on confidence – how much can we rely on our findings? How well do they predict certain outcomes?" (Muijs 2013, p. 4).

The initial motivation for this project was to examine maximizing and satisficing behavior in the online college search process. It was inspired by the prospect of being able to explain and perhaps predict the behavior of prospective college students. It was presumed that this theory might prove valid in the domain of college search, driven by the belief that information seeking behavior would show patterns based on individual psychological differences. Realizing that such a pursuit might result in only a partial explanation, this study aimed to deconstruct all that can be known by using a combination of quantitative and qualitative methods, leaning more towards the quantitative out of a strong desire to produce results that could be considered replicable. For this reason, this research is 'best described' as

post-positivist, rather than 'perfectly described,' since it may be considered by some to be more positivist than not. However, as Phillips and Burbles note, it is a "misconception that positivists can be recognized by their adherence to the use of quantitative data and statistical analyses" (2000, p. 13). Post-positivism is not a unified school of thought, and there are a variety of approaches employed within post-positivist research.

There has been significant debate about the positivist notion of the neutrality of science. According to Kuhn (1970), communities of researchers coalesce around their achievements, or paradigms. These paradigms in turn influence the kinds of research questions that are studied since the researchers are naturally drawn to questions that fit their own theories. These paradigms bind researchers to a discipline. Given that this research project is interdisciplinary, the boundaries of Kuhn's paradigms are not clear cut and it becomes messy to disentangle the associated biases. That said, it is recognized that they exist herein. For example, Schwartz et al.'s maximization theory has biased this study towards an observation of behavior placing an emphasis on individual differences, and assuming that an individual's past behavior can predict future behavior. This research project is also a marketing study, and as O'Shaughnessy points out:

> "...all researchers in buyer behavior will bring to the job some body of knowledge, some system of psychology, and some beliefs about preferable explanatory modes. Those are their biases, which color everything they do and every decision they make. This is not to suggest, however, that these biases cannot be rationally defended – and some biases better than others" (O'Shaughnessy 1992, p. 276).

Kuhn would agree with O'Shaughnessy's assessment that we look at research through a theory-laden lens, colored by discipline.

Phillips and Burbles argue that inquiry cannot proceed without values:

> "The classic dispute about values – the dispute that has fired controversies for about a century – is about whether or not external, nonepistemically relevant values (e.g., political or religious values, or values relating to one's position of power in society or to one's economic interests) legitimately and perhaps necessarily play a role in scientific research" (2000, p. 54).

A post-positivist approach acknowledges these values, yet maintains that there is an objective truth despite the existence of these values. One still strives towards understanding reality, even if the best that can be attained is an imperfect understanding. Post-positivist researchers achieve this goal by assembling "packages of imperfect methods and theories in a manner that minimizes constant biases" (Shadish 1993, p. 18). Given the pragmatic, post-positivist approach of this study, both methodological and theoretical triangulation were employed to explain the phenomena observed and attempt to predict outcomes.

Given that the unit of analysis in this project is the individual, sharing an experience (searching for college information), this project can be categorized as phenomenological research. This research explores what it means to be a prospective college student trying to research and evaluate many options, employing both qualitative methods (focus groups) and quantitative methods (an online survey with an embedded pseudo-experiment). As boyd notes, "Getting at what teens do and why they do it requires triangulation and perseverance. It requires being embedded in teen culture and talking with teens face-to-face. Social media may increase the visibility of certain teen practices, but it does not capture the full story"(boyd 2015a, l. 1909).

Since the timing of this research project coincided with my own daughters' college searches, it was not difficult for me to "embed" myself in the process, at least from a parental point of view. When I started this project, my older daughter

was a junior in college; by the time my thesis is submitted, my younger daughter will be in her senior year of high school, with her college decision hopefully behind her. Obviously, my research into the college application process provided me with knowledge beyond what many parents possess, for better or for worse (depending on whether you ask me or my daughters!). Not only did I have the chance to work through the process with my own children, but I also have had a window into the decision making processes of their friends and their parents. Working in higher education, in an international education office that manages academic programs, I have also been an active recruiter of students, and an undergraduate student advisor. Given my closeness to the subjects and topic of my research, I believe that owning and recognizing my potential subjectivity was important to understanding how to be as objective as possible while conducting this research.

Methodological Triangulation

The triangulation of mixing methods is used to reduce the biases associated with each method, provide more complete answers to the research questions, inform the design of survey questions, shed light on explaining relationships between variables, and help illustrate quantitative findings (Bryman 2012). The outcomes that may arise from triangulation are convergence, inconsistency, and contradiction (Johnson et al. 2007); these outcomes are interwoven throughout the *Discussion* and *Conclusion* of this study.

The methodological triangulation type for this study is sequential exploratory (Johnson et al. 2007), with the focus group study conducted in the first phase, followed a few months later by the administration of an online survey. Within the field of marketing, sequential *exploratory* designs are more common than sequential *explanatory* designs, in which the qualitative research is conducted after the quantitative (Harrison and Reilly 2011). They can be found in studies of online consumer behavior (Bruner and Kumar 2007; Hand et al. 2009; Wallace et al. 2012) used for the purpose of informing survey instrument development, as was the case in this study. In a sequential exploratory research design, both the qualitative and the quantitative can be weighted equally, or it might be the case

that the study is more theoretically driven by one of the methods, with the other being weighted less (Creswell 1999). In this study, the quantitative component is weighted more heavily, out of a desire to produce replicable results that test the three primary theories of interest - maximization, self-efficacy, and media social presence.

Theoretical Triangulation

Theoretical triangulation (Denzin 1978), also described as theoretical pluralism, advocates that "all problems are not amenable to solution through the same theory, but that a particular theory or several theories are appropriate for the problem" (Griffiths 1997, p. 372). The theoretical triangulation approach of this study was three-pronged - incorporating maximizing/satisficing, self-efficacy, and social presence/paradox of media richness theory - to allow for multiple explanations of the phenomena observed and a more complex and holistic analysis. Figure 7 below provides an illustration of how this study has proposed that the theories underpinning this study connect with each other and the elements of information behavior examined. All three of these theories are considered to contribute in their own unique way to explaining information behavior and preferences, or in other words, to their engagement with multiple sources of college information. Their inclusion can be justified based on a desire for theoretical rigor, relevance, and exploration.

Figure 7: Theoretical Triangulation
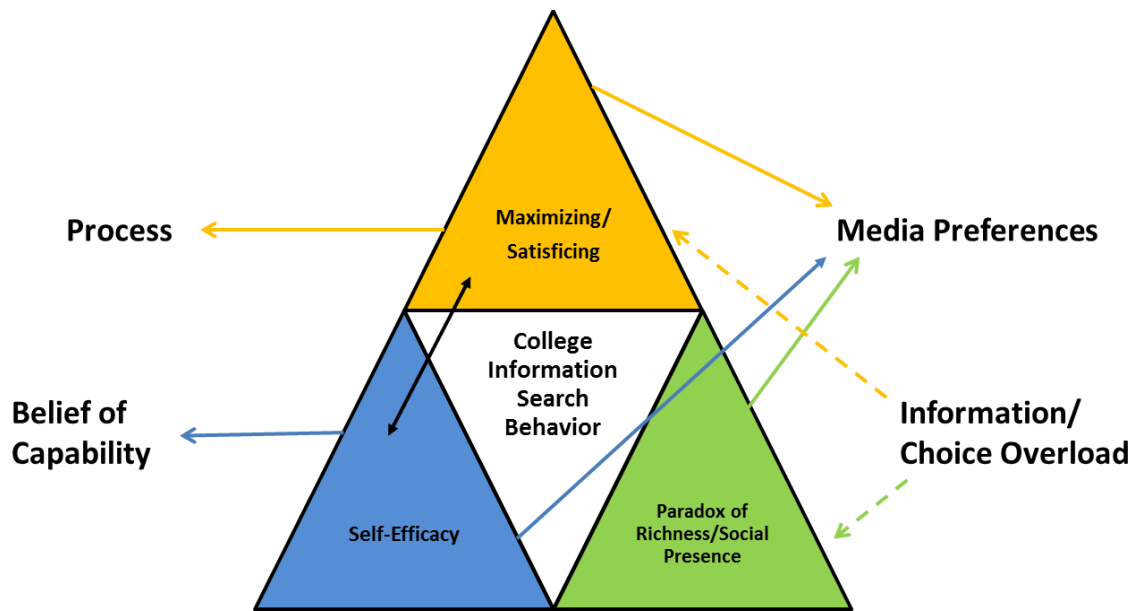
In Figure 7 above, the solid line between Self-Efficacy and Maximizing/Satisficing indicates that there is a hypothesized direct relationship between the variables connected with these theories (*H2*). The theory of Maximizing/Satisficing, the primary theory in the framework of this study, is proposed to influence how students will: behave in the process of seeking information (the number of media sources they will consult, time spent with the sources, and level of engagement) (*H1A, H1B, H1C*); and express preferences for types of media in their search (*H1D* and *H3*). The theory of Paradox of Richness/Social Presence was included to help explain media preferences. Self-Efficacy was added to this study to address students' belief in their capability to conduct their online college search. Information/choice overload is theorized to influence maximizing behavior. It also is considered as a factor when categorizing media along a scale of social presence, per the modified Robert and Dennis (2005) model. Note that the purpose of Figure 7 is to elucidate the theoretical triangulation in this study; it is not intended as a proposed new model for college search information behavior since this research is currently in an early exploratory phase. However, the findings of this research may point in the direction of the development of such a model in the future.

Research Design

The research design for this project is diagrammed below in Figure 8.

Figure 8: Research Design
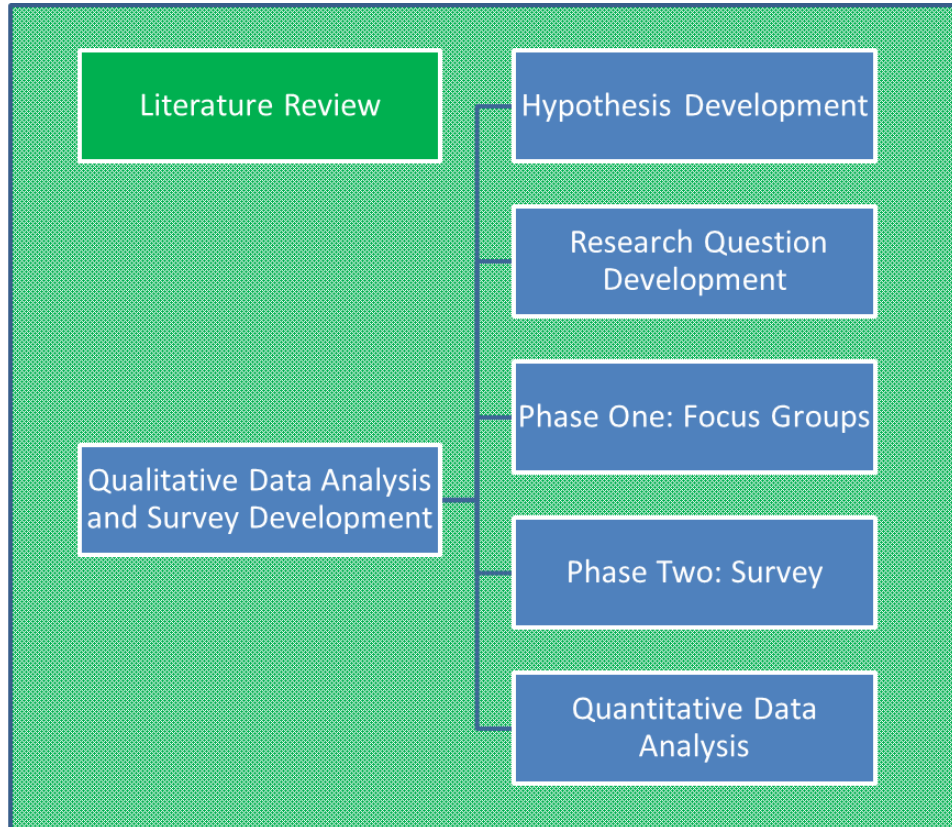
The literature review was the starting point for this research, and continued in the

background through the quantitative data analysis phase (especially given that it

was necessary to continue reading to seek examples of analysis using similar data

and statistical techniques). As was previously noted in *Chapter Five: Introduction*

the hypotheses did not flow directly from a set of overarching research questions;

rather, some of the research questions were drafted in tandem with the

hypotheses, while others bubbled up after the hypotheses were formed. The

extensive, rich nature of the data gathered from the survey revealed research

questions that were not highlighted by the literature review, since Internet and

social media research is a relatively new field and HE marketing is also

underdeveloped. The addition of these questions is justified by the exploratory and

innovative nature of this research, even if some might label this an inductive

approach not in accordance with the strictly deductive reasoning typical for quantitative research.

The focus groups were intended to gather preliminary data that would guide the survey development and also add context and nuance to the quantitative analysis that would follow. As Welles points out,

"Regardless of how you establish whether your online data map to the offline world, there will always be limitations on the extent to which you can generalize your online results to make predictions about offline behavior. In some cases, when you are only interested making claims about the online world, this may not be a problem. However, if you would like to generalize beyond the online context you study to the offline world, it is important that you first confirm the behaviors you study map appropriately…if your data tell us little about the offline world…draw conclusions about online behavior instead of trying to force your data to map to the offline world" (2015, l. 4380).

Had this been designed as a strictly quantitative study, I would have been limited in my ability to analyze the connections between online and offline behavior; for example, I included a focus group question to learn about how students organize the college information they find online. Additionally, the qualitative component of this project served the purpose of revealing the lived experiences of high school students going through the college search process, and acknowledging the existence of multiple realities (Creswell 2013). Conducting quantitative research alone could have resulted in painting a unidimensional portrait of the average high school student. Furthermore, the choice of a sequential exploratory design was appropriate given that college search information behaviour and higher education marketing are under-researched areas.

The focus group findings, described in detail below, were extremely useful for structuring comprehensive and accurate survey questions. For example, students in the focus groups mentioned attending college fairs and going on college

tours, some feeling the latter was necessary before applying. Without this input, I may have focused too heavily on limiting my survey questions to online college search activities or overlooked certain activities.

The two final stages of the design were the survey administration/data gathering and statistical analysis using SPSS. The procedures for these stages are described in detail below.

The timeline for this research was cross-sectional. There was some flexibility in the timing of the focus groups, which were ultimately scheduled throughout late spring and summer. However, the survey was made available starting in late November (over the Thanksgiving holiday weekend) through early January, timed to overlap with college application season in the US; regular decision application deadlines for most US colleges and universities are in early-mid January. The survey was open to college juniors and seniors, and it was valuable to engage with the seniors when they were making their final decisions on where they would apply.

Focus Groups: Sample

During May through August 2015, I conducted four focus groups with a total of fourteen high school rising seniors (i.e. they would be entering their senior year in Fall 2015) from the greater Milwaukee, Wisconsin area, ranging from 16-17 years old; three of the focus groups consisted of two students each, and one included eight participants. The length of the focus groups ranged from 30 minutes to an hour.

All of the focus groups were populated with students attending public high schools, three of which are located in the suburbs of Milwaukee and are schools drawing students from middle-income socioeconomic backgrounds. The high school that is part of the Milwaukee Public School System bills itself as a college preparatory school, and the student body is somewhat mixed, though predominantly its students are from lower-income families.

While there was some diversity in the focus groups, the participants were predominantly female, with only three males participating. There were two Asian participants, one African-American, and one Hispanic. Two students self-identified

as first generation prospective college students. In one of the focus groups, I interviewed identical twin sisters.

Focus Groups: Procedures

The very first focus group I ran included two students from a high school that is part of the Milwaukee Public School System; the principal of the high school, whom I knew through a work-related project, reached out to students on my behalf. Recruitment for the largest focus group was achieved with personal invitations issued by the daughter of a friend who was a junior in high school at the time. One of the two-participant focus groups was also arranged through personal connections. Finally, two focus group participants were recruited by posting flyers at local area coffee shops (see Appendix 3). In order to attract participants via conversations and flyers, a $15 Starbucks gift card was offered as an incentive. I did attempt to arrange focus groups working through the administration of two schools, one of them a private school known as the premier college preparatory school in the Milwaukee area. Unfortunately, I quickly learned that high school administrators were reluctant to assist by providing access to their students for a research project.

Focus Group Theoretical Framework and Questions

Focus groups were conducted with the aims of verifying and enhancing the hypotheses (if needed), guiding the development of the survey that I planned to distribute in late 2015, and adding depth and context to this study.

The theoretical framework that provided direction for the focus groups is Kuhlthau's (2004) theory for the Information Search Process (ISP). Kuhlthau's Uncertainty Principle, discussed in *Chapter Four: Literature Review*, posits that uncertainty and anxiety resulting from lack of understanding or a gap in meaning initiate the process of information seeking: "There is no one way out of uncertainty, but rather there is an individual process of construction within the information search process" (Kuhlthau 2004, p. 94). This model also recognizes that individuals do not treat all information equally; they selectively pay attention to some sources of information and not others. The ISP model incorporates three

realms – the affective (feelings), the cognitive (thoughts), and the physical (actions) – and all of these realms were considered when developing the set of focus group questions, facilitating the groups, and analyzing the focus group data.

The focus group questions, drawn from extant literature and incorporating the realms of the ISP, are listed below, along with any associated theory/research that supported inclusion of the question:

1. Are you considering going to college?

    Hopefully the answer to this question would be yes, since it was intended that only students considering college would be participating in the focus groups, and this was made clear in the outreach to recruit participants.

2. Have you started to think about where you will apply to college? Do you have a list of colleges that you are interested in?

    Chapman's theory of college selection (1986) organizes the college search process along a continuum, and this project is concerned with examining the search behavior stage, in which students are researching their options and deciding where they will apply. The answers to this question would provide clues as to how far along the students were in their college search.

3. Do you feel like you have a lot of options when it comes to choosing a college?

    A key premise of Schwartz's research into maximizing and satisficing is that there is a proliferation of choice in American culture – it is a "culture of abundance" robbing us of satisfaction. He speculates that the "proliferation of options not only makes people who are maximizers miserable, but it may also make people who are satisficers into maximizers" (Schwartz 2004, p. 96). The assumption that there is a proliferation of choice could be domain-specific, and could also vary according to whom you ask, so I wondered if the

students in these focus groups, most from middle-class backgrounds living in the American Midwest, would agree that they have an abundance of choices in the context of college search.

4. What would you do first when looking for information on which colleges to apply to? Talk to your parents or a sibling? Ask a friend? Make an appointment with a guidance counselor? Search on the Internet?

Given that students have a number of different resources to choose from in their college search, I was most curious to learn if searching the Internet (or using social media) would be one of the first sources mentioned, since it is the focus of this study.

5. Where do you look online for college information?

The intent of this question was to try to determine some search preferences and patterns, and identify types and numbers of media sources. Bawden describes three types of online browsing: "'purposive' browsing, the deliberate seeking for new information in a defined (albeit broad) subject area; 'capricious' browsing, random examination of material without a definite goal; and 'exploratory' or 'semipurposive' browsing, in search, quite literally of inspiration" (Bawden 1986, p. 211). Another possibility could be that students would experience "serendipity" in their information seeking, "accidental and fortuitous encounters with information" (Foster and Ford 2003, p. 326).

6. When you are searching online and you cannot find what you are looking for, what do you do?

Agosto's 2002 study of bounded rationality and satisficing in Web-based decision making examined Simon's theories of bounded rationality and satisficing, gathering qualitative data from notes on Web surfing and group interviews with ninth and tenth graders. With respect to satisficing, Agosto found that students exhibited two

major satisficing behaviors: (1) reduction, which included returning to familiar sites, relying on search engine descriptions of sites before exploring them, skimming to evaluate sites, and categorizing into function-based categories to reduce outcome overload; and, (2) termination of search, creating their own personal stop rules such as boredom onset, time limits, physical discomfort, and appearance of information repetition. Would students looking for college information online self-report similar behaviors? Fidel et al. (1999) studied the behavior of high school students searching online for information to complete a homework assignment and discovered that while they appreciated the speed of the Web for finding information, it also set an expectation that information could be found quickly and this led to frustration when information search was not quick and easy; productive and satisfying searching requires training.

7. Do you trust the information you find online?

Hocevar et al. (2014) introduced the concept of social media self-efficacy and found a positive relationship between this measure of self-efficacy and perceptions of trustworthiness of information (on products, health, and news) shared via social media; since self-efficacy in searching for college information online is a key component of this study, asking about its trustworthiness is logical in this context. From a marketing standpoint, this was also an interesting question to gain a sense of students' vulnerability as future consumers of higher education. Knowing whether students tend to trust the information they find online provides insight into how much they might value this information compared to information they receive elsewhere, such as from school counselors or family and friends. Would they trust information from 'official' college websites over advice from fellow students in an online

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college forum such as CollegeConfidential.com, for example, or vice versa?

8. Are you more likely to search for college information when you are at school, or at home?

> This question had the potential to lead to conversations about where students have the most resources to search for college information, including access to a computer or assistance from others such as a guidance counselor or parent. In addition, it would be enlightening to learn when students have the most time (or perceive they have the most time) to engage in college search. What are their environmental constraints?

9. How do you organize the college information that you find online?

> In describing her six-stage model of the information search process (ISP) – initiation, selection, exploration, formulation, collection, and presentation, Kuhlthau notes the importance of mood throughout the process. If one is in an 'indicative' mood, s/he may be inclined to take extensive notes and be less open to the exploration that is fostered by an 'invitational' mood (Kuhlthau 1991, p. 366). How information is organized is relevant to how students go about their search, what resources they use, and how effectively the information is processed. Do high schoolers actually print Web pages? Are they bookmarking sites to go back and reference them later? Chung and Newman (2007) found that when students were using the Internet to search for information for a school project, the hard cognitive work was the organization of the information, while the searching was considered relatively easy 'point and click' work.

10. Who might influence you in making decisions about colleges?

> Models of college choice such as that of Vrontis (2007) incorporate both influencers, the who, and media used, the what. The Vrontis

model uses the Hanson and Litten (1989) model as its basis and overlays the Chapman (1986) and Jackson (1982) models. Parents, high school counselors and teachers, peers/friends, and college representatives are some of the parties who can act as influencers. Since this study is primarily focused upon how students use online media in their college search, this question was included to balance this approach by examining the influence of in-person interactions.

11. How does thinking about your future college possibilities make you feel?

This question was included to gather qualitative data that might indicate students are feeling anxious about the college search and application process. Schwartz's theory suggests that all of the college options available to students might be making them anxious, and impacting their decision making and happiness. Or they may be nervous in a more positive, hopeful way, looking forward to their next stage of life but not knowing what to expect. Kuhlthau actually considers anxiety to be a necessary part of the information search process (ISP): "…the uncertainty which initiates the ISP causes confusion and doubt and is likely to be accompanied by feelings of anxiety. These feelings are a function of constructing meaning and are natural in the ISP" (Kuhlthau 1991, p. 370).

12. Do you have any questions for me about how to search for college information?

I wanted the students participating in the focus groups to have the opportunity to get answers to questions they might have about the college search process, so it would be an exchange of information.

Survey: Sample

The sample for the survey consisted of 251 high school juniors (146) and seniors (105) from 45 states, including Alaska and Hawaii (see Appendix 7 for full

survey respondent demographics). More females (157) completed the survey than males (94), which aligns with research indicating that females complete online surveys at higher rates that males (Sax 2003). Fifty-two students (21% of the participants) identified as first-generation prospective college students; nearly one-third of students entering higher education in the US are first-generation (Smith 2012), so this sample can be considered fairly representative of the prospective college student population as a whole. The grade point average (GPA) range of the participants was 1.7 – 4.0 (students were instructed to provide their unweighted GPA adjusting as needed to a 4.0 maximum scale), and the mean GPA of the sample was 3.48 with a standard deviation of .48. The mean GPA for US high school students in 2009 was 3.0 (Nord et al. 2011, p. 13); in comparison, this sample population consisted of students with relatively high GPAs.

In addition, the size of this sample (N=251) can be considered sufficient for statistical significance using the common rule of 10-15 participants per variable (Field 2009, p. 647). The statistical analysis for this study examined the interactions between five main variables (described in the *Measures* section below), and four moderating variables (gender, year in high school (junior or senior), GPA, and status as first generation student). Similar quantitative studies (Dahling and Thompson 2012; Guadagno 2008; Hargittai and Shafer 2006; Menon 2004; Tsai and Tsai 2003) have been conducted with sample sizes hovering around 100 participants, and the sample size of this study is more than double that amount.

It should be noted that six survey responses contained blatantly left- or right-anchored responses on multiple questions and were removed from the dataset (the original number of completed surveys was 257).

Survey: Procedures

Participants were recruited using ads placed on Facebook and Instagram (see Figures 9 and 10 below), and also snowball sampling through my Facebook friends and LinkedIn connections. As reported by the Pew Research Foundation in its *Teens, Social Media & Technology Overview 2015*, Facebook and Instagram are the two most popular SNS for American teens ages 13-17, with 71% of teens using

Facebook, and 52% using Instagram (Pew Research Center 2015, p. 2). While Facebook has been used to recruit survey participants for health research (Amon et al. 2014; Kapp et al. 2013; Thomson and Ito 2014), its use in education research could be considered an emerging recruitment method. Instagram is also a relatively new platform available to researchers to recruit participants, that is fairly simple to include in an ad campaign since Instagram was purchased by Facebook; ads for both platforms can be created using Facebook Ads Manager. The Facebook ad for this study was essentially a boosted Facebook post on a dedicated research page set up for this project, and included the link to the survey (see Figure 9). Since Instagram showcases photography, and allows less text than Facebook, the Instagram ad included a photo with a stronger aesthetic sensibility and directed to my bio to access the link to the survey (see Figure 10). When boosting a post or creating an ad for placement on Facebook (or Instagram), Facebook allows for ad targeting by parameters such as gender, age, geographic location, and interests. The ads for the survey participant recruitment were broadly targeted at 16-18 year olds, male and female, living in the US. The cost of the ads was controlled by setting a daily spending limit, with the reach automatically calculated by Facebook based on this limit.

As an incentive, all of the Facebook and Instagram ads included a statement indicating that participants completing the survey would have the chance to win a $50 Amazon gift card; after clicking through to the survey, the survey instructions further informed participants that one gift card would be awarded per 50 surveys received. 434 people clicked through to the Qualtrics survey link, resulting in 251 complete surveys to include in the data set. The total cost of the advertising campaign to recruit participants was $469.38, not including $250.00 for gift cards; the cost per completed survey was $2.87. Below in Table 1 is a summary of the Facebook and Instagram advertising campaigns.

Table 1: Summary of Facebook and Instagram Advertising

Platform	Ad time period	Target audience	Clicks	Reach	Cost per click	Ad set cost
Facebook	Nov. 27 - Dec. 16, 2015	Males/Females, 16-18	699	20,010	0.20	$139.97
Instagram	Nov. 23 - Dec. 21, 2015	Males/Females, 16-18	554	79,163	0.45	$249.65
Instagram	Dec. 26, 2015 - Jan. 3, 2016	Males, 16-18	185	26,133	0.43	$79.76
					Total Cost	**$469.38**

Note that the Facebook clicks also include those who liked the post, but did not actually click through to the survey using the link.

Since the survey link included in the ads was generated using the link-shortening service Bitly (http://bit.ly/collegesearchsurvey), to a certain extent I was able to view the sources of clicks on the survey link, and noted that Instagram appeared to be generating more clicks. Therefore, I decided that I would relaunch the Instagram ad after the Christmas, when students would be home over their break, to gain a few more respondents. Additionally, I reset the target audience to males only to counteract a growing gender imbalance in the survey sample; as noted above, more females tend to complete online surveys, and visually-oriented platforms attract more females (61% of 13-17 year old girls use Instagram, compared with 44% of boys) (Pew Research Center 2015, p. 5).

In addition to Facebook and Instagram advertising, I shared the survey link with my personal contacts on LinkedIn, Facebook, and Twitter. I joined and reached out to LinkedIn interest groups focused on college admissions counseling and was successful in connecting with a consultant in the Boston area who shared the link with some of his student clients. On Twitter, given my limited number of followers, I experimented using hashtags in the tweets including #collegeapps, #collegesearch, #CommonApp, and #highschool; the Bitly analytics did not indicate that any clicks to the survey link were generated from Twitter, so I would not rate my recruitment efforts on this platform as successful.

Figure 9: Facebook Ad to Recruit Participants

Figure 10: Instagram Ad to Recruit Participants
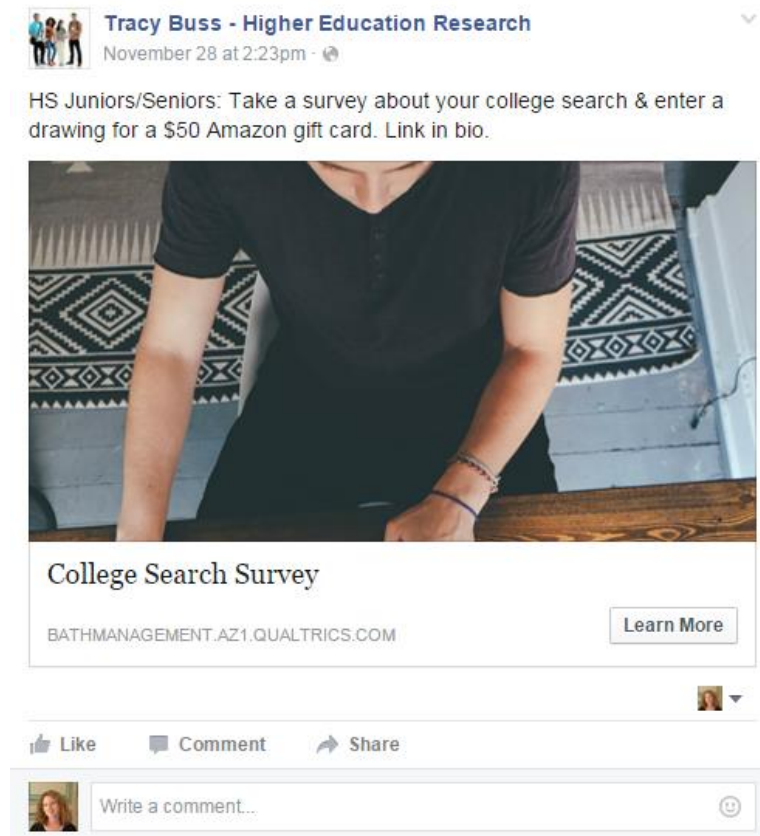
The Survey Instrument

The online survey instrument consisted of eighteen questions and a heat-mapped media screenshot viewing exercise, and was programmed using Qualtrics. See Appendix 8 for the full survey, including sample screens from the heat-mapped media viewing exercise, to be described in more detail below.

In the introduction to the survey, students were informed that they needed to be a US high school junior or senior in order to participate (homeschooled students were not excluded as long as they qualified as juniors or seniors). The first page of the survey also contained a survey consent statement and participants were notified that they were agreeing to participate in the study by clicking through to the next item in the survey; submitting the survey would be considered consent.

In the second screen of the survey, participants were advised that they should take as long as they needed to complete the survey; however, they were to complete it in a single sitting, allowing at least ten minutes. They were also informed that completing the survey would qualify them to be entered in a drawing for a $50 Amazon gift card; one gift card would be awarded per 50 surveys received. Finally, before launching in to the survey, they were provided with some guidance on navigating through the survey pages, since the heat-mapped exercise contained web screen shots that in some cases obscured the "Next" button in the bottom right hand corner of the screen.

Participants were pre-screened for eligibility with three initial questions: (1) Are you planning to attend either a two-year or a four-year college?; (2) What year are you in high school?; and, (3) Is your high school in the US? If the answers to any of these questions were "no" or "other," the survey was terminated.

The initial section of the survey was used to gather basic demographic data including gender, high school city and state, and grade point average (this question was answered with a sliding scale with a maximum of 4.0 and students were advised they could estimate if they didn't know their exact unweighted GPA). Participants were also asked whether either of their parents had attended college.

The next block of questions focused upon gathering information that would provide insight into how much thought and effort the students had put into their college search thus far. They were asked whether they already had an initial list of the colleges to which they might apply. Since anecdotal evidence points to an increase in the number of college applications being submitted by individual students, perhaps enabled by the ease of applying through the Common Application (Kaminer 2014; Kessler 2015), students were also asked how many colleges they planned to apply to. The last question in this block was a yes/no reply to whether they had decided on a potential major/program of study.

To gain a sense of the level of individual online activity, participants were asked: "Approximately how many total hours do you spend online per week, including accessing websites, using social media, doing homework, listening to music, playing games, shopping, and emailing? (Note that texting should *not* be included in your estimate.)" I chose to exclude texting from this time estimate since I viewed it as the modern day equivalent of talking on the phone, and thus not especially relevant to online information behavior as it relates to activities such as college search.

In the focus groups conducted for this study, students mentioned engaging in a wide variety of college search activities. While the primary focus of this study is online information behavior in college search, for comparative purposes I also wished to gather data on offline college search activities, so the participants were asked to estimate the total number of hours they had spent thus far on activities including:

- o Reviewing college (.edu) websites

- o Reviewing online resources like Niche.com, CollegeConfidential.com or other similar websites

- o Looking at college Facebook pages, Twitter feeds, or other social media

- o Attending college fairs or information sessions

- o Meeting with school guidance counselors and/or teachers

- o Talking with friends or relatives

- o Reviewing print materials such as letters and brochures in mail

- o Reading emails sent by colleges

- o Visiting colleges in person

Using a new eight-item scale developed for this project, following the guidance of Bandura (2006) for creating self-efficacy scales, participants were asked to rate their degree of self-confidence in the following activities, using a scale of 0 (least confident) to 100 (most confident):

- o Sharing information or asking questions about college on social media.

- o Keying in a URL in a web browser to open a specific website.

- o Posting in online forums or blogs.

- o Downloading information or materials provided on a website.

- o Using social media such as Facebook, Instagram, or Twitter to locate college information.

- o Using keywords to search for college information on the internet.

- o Reading messages in online forums or blogs.

- o Contacting college representatives using a website form.

Participants were then presented with the items in Schwartz et al.'s thirteen-item Maximization Scale (2002) and asked to rate their level of agreement or disagreement with each of the below statements, using a seven-point Likert scale ranging from 1 (completely disagree) to 7 (completely agree):

- When I watch TV, I channel surf, often scanning through the available options even while attempting to watch one program.
- When I am listening to music, I often change stations to see if something better is playing, even if I'm relatively satisfied with what I'm listening to.[1]
- I treat relationships like clothing: I expect to try on a lot before I get the perfect fit.
- No matter how satisfied I am with my job, it's only right for me to be on the lookout for better opportunities.
- I often fantasize about living in ways that are quite different from my actual life.
- I'm a big fan of lists that attempt to rank things (the best movies, the best singers, the best athletes, the best novels, etc.).
- I often find it difficult to shop for a gift for a friend.
- When shopping, I have a hard time finding clothing that I really love.
- Choosing movies to watch is really difficult. I'm always struggling to pick the best one.[2]
- I find that writing is really difficult, even if it's just writing a message to a friend, because it's so hard to word things just right. I often do several drafts of even simple things.
- No matter what I do, I have the highest standards for myself.
- I never settle for second best.
- Whenever I'm faced with a choice, I try to imagine what all the other possibilities are, even ones that aren't present at the moment.

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[1] The original item began with "When I am in the car listening to music…" and it was updated by removing the word "car."

[2] The first sentence of the original item was "Renting videos is really difficult." This item was updated by substituting the sentence "Choosing movies to watch" since "renting videos" is outdated terminology given the prevalence of streaming movies on demand.

Next, as a distraction task, the participants were advised that they should consider how a number of factors could influence their decisions on where to apply to college:

- o Programs offered match interests

- o Number of students attending

- o Diversity of student body and faculty

- o Location, e.g. proximity to home and family, climate

- o Attractiveness of campus and/or campus housing

- o Quality of education/teaching

- o Class sizes

- o Tuition cost and potential financial aid offered

- o Reputation/rankings

- o Career prospects for graduates

- o Secular vs. non-secular (religious affiliation)

The participants were presented with two separate lists of different media sources that they could choose to view, allowing them to assume that reviewing the sources was part of this exercise to think through the importance of the various factors. They could choose to view as many of the sources as they wished; viewing none at all was also an option.

The media sources included six 'student-to-student' sources (Niche.com, CollegeConfidential.com, Unigo.com, Snapchat, a Boston College blog called Strikingly.com, and YikYak) and six 'institution-to-student' sources (US News & World Report website, US Dept of Education College Scorecard website, Facebook, Twitter, Instagram, and a college website). This categorization of the sources into 'student-to-student' and 'institution-to-student' was based upon student

comments from the focus groups about their trust in student voices versus institution-produced media. Additionally, this categorization was created to test *Hypothesis 1D*, described in *Chapter Five*, which relates to maximizing/satisficing behavior and Hocevar et al.'s (2014) research on social media self-efficacy.

Each of the media sources was an actual screen-shot example, since it would have been nearly impossible (and unnecessary) to create realistic mock ups. Care was taken to choose institutions following best practices in social media marketing for higher education, appropriate to the platform being used. Generally, some of these best practices include: interacting with user posts; sharing information from other pages; interlinking between different platforms using hashtags; engaging even those who may have no association with an institution; creating original and curated content focused on the needs of followers; reinforcing school pride; including calls to action; and paying attention to aesthetics (Russell et al. 2014). Additional information on the media sources included in the survey is in Table 2.

Table 2: Media Sources in Media Viewing Exercise

Media Source	Category	Example Used	Comments
Niche.com	Student-to-Student	University of Texas - Austin	Niche.com was mentioned by a couple of students in the focus groups.
CollegeConfidential.com	Student-to-Student	Discussion of academically- and musically-strong schools	The screen shot used in media exercise was chosen since it was a non-controversial topic of discussion, not focused on any single institution.

Unigo.com	Student-to-Student	Carleton College (Northfield, Minnesota)	Unigo.com is a college search engine site less likely to be recognized by many students, in comparison to Niche.com.
Snapchat	Student-to-Student	University of Michigan – Ann Arbor	Univ. of Michigan has a reputation as a social media early adopter.
Blog	Student-to-Student	Boston College - Strikingly.com	Blog posting written by current Boston College student.
YikYak	Student-to-Student	University of North Carolina	
US News and World Report	Institution-to-Student	University of South Florida – St. Petersburg	The US News and World Report college rankings are the most well-known in the US.
US Department of Education College Scorecard	Institution-to-Student	University of Minnesota – Twin Cities	Scorecard postings are all relatively uniform, so this choice was rather random.
Facebook	Institution-to-Student	Kenyon College (Gambier, Ohio)	
Twitter	Institution-to-Student	University of Oregon (Eugene, Oregon)	
Instagram	Institution-to-Student	Baylor University (Waco, Texas)	Baylor is known for its school spirit/social media engagement.
College Website	Institution-to-Student	DePauw University (Greencastle, IN)	

The participants were instructed to click around on the areas of the sources that they viewed, and their clicks were heat-mapped. The heat-mapping output was manipulated and simplified to calculate the number of clicks that were generated, in order to measure engagement with the sources. Time spent viewing each media source was also recorded as a variable for analysis.

Finally, the survey concluded by asking students to rate the importance of each of the choice factors, presented in the distraction task described above, using a seven-point Likert scale.

Measures

Maximizing and Satisficing – MaxScoreSum

The Maximization Score (MaxScoreSum) variable sums the thirteen items in Schwartz et al.'s Maximization Scale (MS; 2002) (see Appendix 1). Each item in the MS was measured with a seven-point Likert-type scale, ranging from 1 (completely disagree) to 7 (completely agree).

Since Schwartz et al. shared the original scale in 2002, there have been eleven revised or original measures of maximization published (Cheek and Schwartz 2016). Given the proliferation of new measures, and uncertainty about which to incorporate into this study (Schwartz et al. only recently published an evaluation of the new measures, in March 2016, after the data for this project was collected), the original Maximization Scale was deemed to be the best option. In retrospect, reviewing Dalal et al.'s (2015) trial of the Maximizing Tendency Scale (MTS; Diab et al. 2008), published around the same time this study was conceived, the MTS may have been a suitable choice for this study. As discussed in *Chapter Five: Hypotheses and Research Questions*, Dalal et al.'s research design is somewhat similar to this study, as it examined search strategy using an information board-like task derived from Payne (1976) in which college students were asked to complete a course schedule; additionally, the students completed an exercise in a computer lab that traced them through the process of selecting restaurants for a new campus center. Dalal et al. administered both the MS and MTS to their study participants, performing a factor analysis and concluding that the MTS items more

highly correlated with choice decision making times and individual differences connected to maximizing behavior (e.g. conscientiousness, extraversion, openness, etc.).

Perhaps supporting critics of the MS, the Cronbach's Alpha on the MS for the sample in this study (N=251) is .594; a number higher than .7 is generally preferred. This statistic was cross-checked with an examination of the MS to confirm that none of the items had been inadvertently reverse-scored. Nenkov et al. (2008) have performed exploratory factor analysis on the MS, dividing it up into three shortened versions of the scale, consisting of three, six, and nine items, and found that the six-item scale demonstrated superior psychometric properties compared to the nine-item scale and original thirteen-item MS. To investigate the possibility of using only a portion of the MS scale for this study, Cronbach's Alphas were generated matching the same items as sorted by Nenkov et al. and the resulting statistics were all lower than .594, indicating that the thirteen-item MS should be retained (three-item, .270; six-item, .425, nine-item, .546).

Cheek and Schwartz advise that "...the theoretical conception of maximization...should be the most important element in determining how to measure maximization" (2016, p. 129-130) and provided a new two-component model of maximization that clarifies the theory proposed by Schwartz et al. (2002). They continue to note that the subsequent reworkings of the MS pay too little attention to maximization theory and put the scale (cart) before the horse (theory).

With their revision of Schwartz's Maximization Scale, named the Maximization Inventory, Turner et al. (2012) rejected the definition of satisficers as those on the low end of the Maximization Scale continuum, instead viewing satisficing as an independent construct. However, Cheek and Schwartz (2016) appear to stand by their original conception of maximizing and satisficing as a spectrum. Unfortunately, the maximization literature does not provide any clear guidance on how one might examine maximizers and satisficers in a binary grouping. The extant research employing maximization scales consists of a number of studies that treat the MS as a continuous variable (Dahling and Thompson 2012;

Dalal et al. 2015; Iyengar et al. 2006; Leach and Patall 2013; Parker et al. 2007; Rogge 2016); the researcher was unable to find a study that dichotomized the MS to examine satisficers and maximizers as distinct groups or typologies. If similar constructs can serve as an example, Eichner et al.'s taxometric study of optimism is intriguing, in which it is argued that:

> "…optimism has a dimensional latent structure. Although the terms optimist and pessimist will doubtless persist in daily discourse, the division they connote does not technically exist. The difference between optimists and pessimists is one of degree rather than of kind. A person's level of optimism may vary from very high to very low, but there are no distinct classes of optimists and pessimists (or nonoptimists)" (Eichner et al. 2014, p. 1058).

Furthermore, it is strongly recommended that optimism should never be dichotomized due to its dimensional nature; it should be treated as a continuous variable and analyzed using regression rather than analysis of variance.

Indeed, there is intense debate surrounding the topic of dichotomizing variables, most recently in a special issue of the Journal of Consumer Psychology (4, 2015); "death to dichotomizing" is a strong theme. However, it is not possible to read through these articles and come to a definitive, blanket approach to dichotomizing; rather, the risks and advantages need to be considered on a case-by-case basis. Amongst the disadvantages is a potential loss of individual-level variation and consequent diminished precision in prediction (Rucker et al. 2015). Since one of the key aims of this project is to examine individual differences in decision making and information behavior, distilling the analysis into two groups is not appropriate. Concealment of non-linearity in the data is another concern noted in the debate (Royston et al. 2006; MacCallum et al. 2002), along with the inability to preserve the continuous nature of a variable for graphical presentation (Rucker et al. 2015). The counter argument that dichotomizing simplifies analysis and makes it easier to present, especially to the lay person, seems weak given that rich data should be the end goal. For example, to introduce the results of their study

exploring shopping behavior of maximizers versus satisficers, Chowdhury et al. (2009) use a simplified method of sorting maximizers and satisficers by the top and bottom thirds of the maximizing distribution, and provide bar charts of the means between the groups, but fail to discuss whether the differences between the group means were statistically significant. In the end, they resort to regression analysis of data from all of their study participants.

Considering this debate and leaning towards an approach that would treat the Maximization Score as continuous and analyze it as such, these different approaches were examined by conducting independent samples t tests. For these tests, the Maximization Score variable was dichotomized using a median split, and also divided into three groups using z scores to identify the extreme high and low groups. The results of these statistical tests are below in Table 3:

Table 3: Independent Samples T Tests for Median Split versus High/Low

Independent Samples T Test - Median Split to categorize Maximizers/Satisficers

Variable	Maximizers (N=126) M	SD	Satisficers (N=125) M	SD	F	Sig.	t	Sig. (2-tailed)	95% CI	Cohen's d
GrandTotalViewed	3.04	2.597	2.23	3.04	6.725	0.010	-2.73	0.007	[-1.390,-.225]	-0.346
TotalTime	110.83	187.37	81.89	112.77	2.244	0.135	-1.48	0.140	[-67.43,9.54]	-0.188
TotalClicks	16.02	20.09	10.89	13.72	7.291	0.007	-2.36	0.019	[-9.42,-.86]	-0.299

Independent Samples T Test - High/Low to categorize Maximizers/Satisficers

Variable	Maximizers (N=30) M	SD	Satisficers (N=32) M	SD	F	Sig.	t	Sig. (2-tailed)	95% CI	Cohen's d
GrandTotalViewed	3.10	2.41	2.31	2.26	0.001	0.976	-1.33	0.190	[-1.98,.40]	-0.342
TotalTime	101.28	130.75	100.03	159.05	0.127	0.723	-0.03	0.973	[-75.49,72.00]	-0.008
TotalClicks	18.37	23.40	12.40	17.06	0.870	0.355	-1.15	0.254	[-16.31,4.39]	-0.297

With the median split, the independent samples t test showed that the difference in the number of media sources viewed between the Maximizers (n = 126, M = 3.04, SD = 2.60) and the Satisficers (n = 125, M = 2.23, SD = 3.04) was statistically significant, t = -2.73, p = 0.007, 95% CI [-1.390, -.225], d = -0.346. Additionally, there was a statistically significant difference between these two groups for the total clicks within the media sources that were viewed. However, the t tests did not indicate a significant difference in the mean total time that was spent viewing and clicking within the media sources. In contrast, when the extreme

high/low groups were examined with independent samples *t* tests, none of the differences in the means showed significance.

While these results of this analysis were intriguing, contradictory as they were, and possibly could have been used as justification to reject dichotomizing or using an extreme groups (high/low) approach to working with the Maximization Score variable, the fact still remained that I had developed hypotheses for this study that were a poor fit for a purist approach that allowed for nothing but regression-based analysis. Therefore, I decided that using a mix of regression and analysis of variance statistical tests would allow me to break some new ground that could add to the literature on working with the Maximization Scale and at the same time teach me how to use a wider variety of statistical tests.

Self-Efficacy for Online College Search - SETotalScore

Using a new eight-item scale developed for this study, following the guidance of Bandura for creating self-efficacy scales (2006), students were asked to rate themselves on a scale of 0 to 100 for the following activities:

- o Sharing information or asking questions about college on social media
- o Keying in a URL in a web browser to open a specific website
- o Posting in online forums or blogs
- o Downloading information or materials provided on a website
- o Using social media such as Facebook, Instagram, or Twitter to locate college information
- o Using keywords to search for college information on the Internet
- o Reading messages in online forums or blogs
- o Contacting college representatives using a website form

This scale is similar to the instrument developed by Tsai and Tsai (2010), which measured college students' perceived self-efficacy in searching for information on the Internet; however, its design is unique and domain-specific since it focuses exclusively on searching for college information online.

Reliability analysis was performed on the scale and the Cronbach's Alpha for the sample in this study (N=251) is .862. The inter-item correlation matrix and item statistics for this scale can be referenced in Appendix 2.

Engagement – TotalClicks

Engagement with the media sources presented in the heat-mapping exercise was measured by counting clicks, which is standard practice in digital marketing as a behavioral/physical metric of engagement (Frank 2015; Media Rating Council 2015). The survey participants were instructed as follows: "As you review these media sources, you should click on all parts/sections that you review, even if this means you look at just one part of the source, then decide to move on to another one." The maximum number of clicks allowed for each source was set at ten. The heat-mapping function of Qualtrics allows researchers to map the areas of an image that receive the most clicks; the coordinates with high numbers of consolidated clicks are shown in red. However, for this project, the clicks from the heat-mapping were analyzed on an individual basis, and tallied. The TotalClicks variable sums the clicks within all of the media sources that were viewed by each individual participant.

Number of Media Sources Viewed – GrandTotalViewed

The number of media sources viewed (GrandTotalViewed) variable tallied the number of media sources viewed as screen shots, from both of the two categories (student-to-student and institution-to-student). There were a total of twelve sources, six in each category, and the most sources that any one student viewed was eleven, and the minimum, none (M=2.64, SD=2.38).

Time Spent Viewing Media Sources – TotalTime

The time spent viewing each of the screen shots of media sources was recorded using the timer feature of Qualtrics, from when the source appeared to when the participant clicked on the arrow button in the lower right hand corner of the image to move the next source, or next section of the survey. The TotalTime variable summed the time spent viewing all media sources, from both student-to-student and institution-to-student categories. Time was measured in seconds, and

the maximum amount of time spent viewing the sources was 1804.87 (30.08 minutes) and the minimum, 0 (M=96.42, SD=155.15). The wide range of time spent could be explained by participants who may not have spent continuous time completing the media viewing exercise, perhaps distracted by multitasking or just choosing to walk away from the survey for a period of time.

Ethical Considerations

At the time of proposing my study to the University of Bath's School of Management in spring of 2015, it was also reviewed and approved by the departmental ethics officer.

The students participating in the focus groups, and their parents or guardians, were required to sign consent forms, and notified of the intent to publish the results of this research with their information anonymized. Following standard ethical guidelines for human subjects research, care was taken to ensure that: participants were not harmed (physically or emotionally) or deceived, individual identities were protected, and participation was voluntary. For the latter, it could be the case that parents would pressure their child to participate, since they would see it as valuable that their child gain information on searching for colleges. To address this possibility, I included a very clear statement that the child was willingly participating in the research as part of the consent form that the student signed (see Appendix 5). Probably given that the topics discussed in the focus groups could not be considered as sensitive, I did not encounter any parents or students who expressed reservations about participation.

The consent process for the online survey in this study was embedded in the beginning of the survey since there was no alternative that would not have severely limited the number of potential participants, given that the recruitment of participants was anonymous, primarily using Facebook and Instagram. Students provided their consent by clicking through to complete the survey (see Survey in Appendix 8). It is of note that US and British requirements for research participation consent from minors (in the US, defined as those under 18 years of age) do differ; since I am a student of the University of Bath, I was not required to

adhere to the US standard which may have required parental consent and inhibited my ability to recruit participants for the online survey.

Care was taken to set up a dedicated Facebook page for my study that helped to legitimize my standing as an academic researcher; I did not want potential participants to mistake my research for a marketing scheme. While I did offer an incentive to participate (one $50 Amazon gift card for each 50 surveys received), the incentive was not so large as to become the only motivation for completing the survey; all participants had an equal chance in the drawing for the gift cards (which was done using a random number sort of the email addresses of those who completed the survey); and the type of incentive offered was not related to the topic of the survey (i.e. I didn't give away college t-shirts) (Cobanoglu and Cobanoglu 2003).

One of the limitations of this study could also be considered an ethical issue: since the survey was only offered online, it excluded potential participants who did not have access to a computer or mobile device to complete it. In her study on low-income students' use of the Internet to find financial aid information, Venegas notes that "A cultural ecological model emphasizes the impact of family or home environments, peer environments, school environments, and community or out-of-school environments" (2006, p. 1655). In such a model, it is recognized that context does matter, and a brother or sister competing for use of a single shared computer, or a bad Internet connection that cuts off in the middle of a task can discourage even a maximizer from conducting college research online. However, according to the Pew Research Center (2015, p. 2), 92% of teens (defined as those ages 13-17) report going online daily and ¾ of teens have access to a smartphone (with African-American teens exceeding the percentage of white teens having smartphone access, 84% vs. 71%). Given these statistics, it seems unlikely that a large number of students were prevented from completing this survey due to lack of technology access. The survey, built in Qualtrics, was optimized for mobile use, which hopefully enabled students to complete it on their mobile devices. That said, the much critiqued and examined 'digital divide' applies not only to access to technology, but also extends to "…a constellation of different and intersecting

social, economic, and technological differences…" (Gunkel 2003). Not to mention other potential personal barriers such as disability, which makes it difficult or impossible for some students to access websites and social media platforms (Adam and Kreps 2006).

Data Analysis Procedure and Tools

The tools used for the analysis of the data generated for this study ranged from traditional to experimental. Since the focus groups conducted did not result in a large amount of qualitative data, it was possible to conduct an analysis of themes manually, with pen and paper. The first stage coding method used to analyze the focus group transcripts was descriptive coding (also known as topic coding). This coding was appropriate 'all-purpose' choice to sift the data into initial high-level categories (Saldana 2009). Thematic coding was chosen for the second stage of the qualitative analysis, with the advantage that "it does not require the detailed theoretical and technological knowledge of approaches, such as grounded theory…it can offer a more accessible form of analysis, especially for those early in a qualitative research career" (Braun and Clarke 2006, p. 81). Additionally, thematic analysis is considered "essentially independent of theory and epistemology, and can be applied across a range of theoretical and epistemological approaches" (ibid., p. 78). These methods were flexible and efficient to distill the focus group data into a manageable set of findings that could be used for development of the survey that followed the focus groups, and to add depth to the analysis of the survey data.

Qualtrics' heat-mapping and question timing features influenced my survey design, in particular the embedded media viewing exercise. When this project was first conceived, I had planned to observe the online search activities of students in a computer lab setting, as Agosto (2002) had done in her study on bounded rationality and satisficing behavior. However, taking this approach would have limited my sample size considerably, and would have constrained my ability to examine the behavior of students outside of my local area; I desired to increase the scope to a wide variety of students from across the US so that the results might be more representative of students from different US regions and socioeconomic backgrounds, and replicable in future research. When I determined that I could use

the heat-mapping feature of Qualtrics to design a media viewing exercise, implemented in a pseudo-experimental way, I decided it would be a novel approach worth the risk (i.e. potential technological glitches with the survey programming, and survey complexity that could have confused or turned away survey participants). The Qualtrics output required some manipulation to obtain the measures that were transformed into variables, but it was not a complicated process (for heat-mapping, Qualtrics produces a report that shows coordinates where on the screen individuals click, consolidating the clicks into a hot spots visualization; all I needed for my analysis was to record the number of clicks, so I ignored the exact coordinates of where the participants clicked). For my analysis and presentation of the survey data, I used SPSS and Excel, after investigating other possibilities including structural equation modeling (which I concluded was not appropriate given the structure of my hypotheses and research questions).

Methodological Biases, Limitations and Assumptions

Procedural methods were used to minimize the potential for common method bias due to the design and administration of the survey. Since the data for all of the variables was collected in the same survey, there was the potential for an artificial covariance as the result of self-report bias (Podsakoff et al. 2003). Counteracting a consistency motif in the data, the questions and instruments included in the survey were varied such that the respondents would not have been tempted to attempt to reply consistently; for example, the Maximization Scale items and Self-Efficacy Scale items were not similar such that a respondent would try to match replies to be consistent between these two scales. As well, it is unlikely that the respondents would have made assumptions about the theories behind the survey questions, causing them to perhaps overthink the questions, since the theories of maximization and self-efficacy are very unlikely to be known to high school students.

Addressing possible method effects from survey item characteristics, the survey questions used various scale formats, such as sliders, Likert scales, semantic differentials, and heat-mapped images. Given that this survey was designed for high school students, careful attention was paid to make the questions as clear and

simple as possible. Detailed instructions were provided when needed, such as for the heat-mapped media viewing exercise.

Item context is another type of method bias; in this study, two potential causes that are relevant include context-induced mood and scale length (Podsakoff et al. 2003). The survey was introduced with a neutral tone, which should not have set a particular mood at the start. Even while this research was undertaken in part due to concern about information overload in the college search process, this was not communicated to the participants either directly or indirectly. The scales in the survey were kept to a reasonable length in the opinion of this researcher; however, it is possible that some students may have found it a long survey compared to the online quizzes that they might encounter on Facebook, etc. They did have an incentive to finish, eligibility to enter the drawing for a $50 Amazon gift card.

As discussed above under *Ethical considerations*, a limitation of this study's methodology was the exclusion of students who do not spend time online and/or do not have a Facebook or Instagram account; these social media platforms were the main means used to solicit participants for this study. Therefore, this study could be skewed towards overstating the amount of time that the students spend online and/or searching for college information online, by excluding those students who spend little if any time online.

Additionally, students with low efficacy online may have grown confused or frustrated with the survey and aborted before completing it. Indeed, there were 434 students who clicked through to the survey link, and 251 who made it through to the end. The omission of these students from the sample could have resulted in a sample of students with high online self-efficacy, which likely would equate to high self-efficacy in online college search.

Another methodological limitation of this study was its reliance on self-reporting, which assumes that students will be truthful and accurate in stating the amount of time they spend online, for example. It could also be the case that study participants exhibited overconfidence when they completed the Self-Efficacy Scale in the survey. The only way to avoid reliance on self-reporting of efficacy would

have been to personally observe students as they searched online and rated their performance; however, this would have made for a different type of study, and would have only been possible with a much smaller sample.

Conclusion

The methodology for this study, as detailed above, followed relatively standard conventions for mixed-methods research. This study could also be said to fall within the boundaries of post-positivist research. Traditionally-structured focus groups provided overall context and depth to the study, and contributed to the development of the online survey that was the primary instrument to gather data.

There were a couple of aspects of the methodology that could be considered innovative, and therefore were not without an element of risk. The recruitment of survey participants using Facebook and Instagram advertising has not been a method used widely yet; for this survey, it was quite successful and 'netted' 251 complete surveys. Additionally, the media viewing exercise in the online survey could be thought of as 'out of the box' as a pseudo-experiment, since it used heat-mapping in a new way and attempted to simulate the environment that a student would experience trying to select online sources of college information. Of course, this exercise was not without its flaws (one of these being the inability to force students to complete the exercise in a single, continuous sitting), but it was the closest simulation possible outside of individually observing students surf the Internet and/or use their smart phones in a lab setting (which is also not naturalistic, so has weaknesses of its own). Fortunately, these experimental methods helped achieve the aims of this study, and may be considered by others for future research.

The next chapter, *Chapter Seven - Research Findings: Focus Groups*, will detail the findings of the focus groups that were conducted in the first phase of this project.

CHAPTER SEVEN – RESEARCH FINDINGS: FOCUS GROUPS

Introduction

In the four focus groups I conducted with rising high school seniors in the Milwaukee, Wisconsin area, a wide variety of information was gathered from the set of questions posed, but there were some common themes that emerged, presented below. The presentation of the data organized by themes will be followed by a more in-depth interpretation of the findings. The conclusion of this chapter will explain how the findings shaped this study.

Themes in the Focus Group Data

Numerous college options and decision making

Some students expressed that that they are searching for the "perfect" college; there are a lot of options and some, but not all, are feeling pressure to choose the "right" one. Opinions differed on whether having a lot of options makes decision making easier, or more difficult. Students also worried about making a decision and then finding it necessary to switch majors (or colleges).

> *I know there's a lot of options, but I think the hard time is to choose the right one. I get letters from a lot of different colleges, and heard of a lot of different colleges, but none are me. It's hard to find the perfect college.*

> *Too many options.*

> *It's kind of nice to have a lot of options. There's kind of something for everyone.*

> *There are a lot of colleges that sound great…I will choose a college and regret it.*

> *…it is hard, you pretty much change your mind every week. I know someone who just completely switched her major. That's scary. You think you know what you want to do and then it changes.*

Location

For the population of students in these focus groups, location is often a factor that narrows the field of college options. They want to stay close to family or perceive that going to college out of state will be expensive. [It should be noted that Wisconsin has a strong state university system, with 13 four-year and 13 two-year institutions, and there is a strong bias towards attending these institutions due to their proximity and perceived value compared to private institutions in Wisconsin and elsewhere. These sentiments may shift as state funding for the University of Wisconsin System continues to decrease.]

> *I feel that there are a lot of options, but I am limited based on location. Once you think about all of the different factors, there's not really that many choices.*

> *Depends on tuition, going out of state more.*

High school guidance

Guidance counselors are marginally helpful in the advice they give, and students do not tend to go out of their way to seek their advice. For Milwaukee-area students, they predominantly focus on Wisconsin colleges, especially state schools in the University of Wisconsin System, which are promoted as affordable and good quality. There also seems to be a fair amount of peer influence to go "where everyone else goes."

> *A lot of people in our school go to Madison. They go since everyone else goes. They all want to be together.*

> *When I had my junior meeting [with my guidance counselor], we talked about Marquette [a private institution in Milwaukee, Wisconsin], and learned that they give a discount to in-state students.*

Our counselors push University of Wisconsin System schools, like UW River Falls for accounting.

I had one counselor meeting with my mom and we discussed financial aid mainly, making sure I had admissions requirements. It wasn't super helpful.

Influence of family and friends

Family and friends are useful sources of information, but only up to a point, since they may not have first-hand knowledge of the desired programs or perhaps haven't attended college themselves.

Originally, I wanted to go into advertising. When I was asking my teachers, I had no idea where the heck to go. My family doesn't really know a whole lot about it, since most of them are in business and health.

Friends and family who are successful…would listen to them.

I am going to be the first in my family to go to college so I cannot go to them [my family].

Cost of college/financial aid

The cost of college and financial aid worries surfaced throughout the discussions, in the context of various questions. Financial aid prospects were often cited as one of the deciding factors when searching for college information.

I'm in College Possible, so I started looking into Madison right away. I saw their tuition rates, acceptance [rate], and then I went to possibilities of financial aid. Then I went on a campus visit. But to find a specific college I looked right away at tuition rates. That's my big priority. [College Possible is a nonprofit organization, working in six cities in the U.S., that provides coaching to low-income and first-generation prospective and current college students.]

I feel like even if I end up getting into a lot of schools, I am limited by

finances. I need something that would be "on my level."

Going direct to the source for information

A few students took the initiative to call colleges to gather information, and also reached out to professionals in fields that interested them to arrange informational interviews or job shadowing.

When I find a college that really interests me, I call them. But usually

some schools have called me first. I am still undecided. There are a

lot of things I really want to do.

I went on a job shadow too, and the people there too helped me

make decisions. My dad's cousin works at an ad firm. When I talked

to teachers and people on my job shadow they all told me that you

could go to a well-rounded school but it would help you a lot if you

could go to an arts school, and I hadn't thought of that option. As a

teenager there's not a whole lot of ways to know what's going to

happen in your life.

Campus visits

There seemed to be a sense that it is important, almost necessary, to tour a college and see it in person before deciding whether to apply. This could be a limiting factor for students without the time, family support, or financial resources to make college visits. It also appears to indicate that even with online resources like virtual tours, students still feel the need to visit in person, even at the early stages of the application process.

I have toured about four different schools. I don't like the first two I

toured, that I thought I would like, and now have changed my mind

to the second two I toured (the ones my parents originally

recommended, that I had thought I didn't want to go to). I should

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definitely apply to more than two, I know. But I don't know where
else. My parents work every day so it is difficult to arrange more
tours.

College fairs

Students also seemed to appreciate college fairs/visits held at their schools, perhaps for the convenience factor.

[I go on] college visits, and [to the] college fair at school. Three times
per week different colleges come; [there are] about 50 colleges at
the college fair.

In November and December colleges will come during school. Can
ditch class to go.

Organization of college information

Students varied in their organization of college information. A few created spreadsheets that included information about tuition, programs offered, admissions requirements, etc., but more relied upon their memories, or parents who organized for them with spreadsheets and folders for brochures.

I don't really write any of it down. I have information from tours laid
out in my bedroom. Sometimes I will pull out materials to compare.
It's mostly just thinking in your head about the parts you like the
best.

My mom has a notebook.

I have a Google doc master spreadsheet. My mom also has a folder
where we store other things like materials from campus tours.

Anytime I say anything about a school my mom Googles it.

Application fees

Application fees also seemed to discourage students from planning to apply to a lot of colleges.

> You obviously cannot apply everywhere when it's a $75 application fee.

Recruitment emails

Students generally felt that college emails are a nuisance, and mostly ignored them except perhaps when an email referenced a specific program that interested them.

> I think the college emails are pretty much a waste. I delete all of them. It feels like I received 20,000 from St. Olaf and lots of small liberal arts colleges… Someone should have told us to set up a separate email when taking PSAT for college spam. I'm too lazy to unsubscribe to emails.

> I don't really get a lot out of their emails. I did find out about Depaul through an email, though, since they sent an email about public relations and advertising. Most of them I ignored.

Search process

Students commonly start their online searching by Googling their intended program of study, and also perhaps their region. It wasn't clear that many were branching out much beyond college websites, though a few were familiar with sites such as College Confidential and Niche. Social media did not appear to be a place that these students often go to look for college information, based on the fact that they did not mention Facebook, Twitter, Instagram, etc.

> I have Googled top accounting colleges and if it's not on that list I am not going to go there.

I like Niche [.com] for how it ranks in different areas and provides
student reviews on campus food, environment, academics, strictness
of administration, etc. College Factual [.com] is also good.

The when and where of searching

The focus group participants seemed to be pretty evenly split on the question of
where they conducted their college research, either at home or at school; it mostly
depended on when they had time to fit it in.

I probably search more at home than at school. They push schools
that are state involved. At home I can look for things without their
influence. Also my parents are nagging me to look at home.

Have done almost all of college research at school, since busy after
school. Go to career center at school.

Credibility of college marketing

Students tended to trust the information that they found on college websites,
though also expressed some skepticism and noted that information could vary
across different sources (e.g. ACT scores to get in). In the minds of some of these
students, seeing the same information on various sites served to reinforce its
accuracy. However, on the flip side, some students also mentioned that they trust
student reviews/testimonials.

For Viola University, I looked at student videos, actual students who
have been there and lived through the four years. I think it's
trustworthy since it's the students themselves. I also looked at posts
where students talk about classes and financial aid. I am afraid that
some schools say they will give a lot of aid but do not.

I usually don't fully believe anything unless I see it in multiple places.
US News college rankings and stuff like that. Some places might have
a high opinion but maybe they are getting funded by something.
When colleges explain stuff that they have they want you to go there

to get your money and alumni status. They may talk about it more
highly.

Overall feelings about the process

When talking about how they feel about the college search and application process, "stressed" and "overwhelmed" were common replies, but there were also some positive emotions expressed, such as "excited" (e.g. to be free, to have new experiences). Students mainly seemed stressed about the competitive nature of the process and the prospect of student loan debt. That said, the students in these focus groups did not seem overly concerned about not getting into college, perhaps since for the most part, the colleges they mentioned as possibilities are not in the highly selective group for admissions.

> *Competition is good but would be nice if life didn't have as much*
> *competition. You have to be the best, and there's too many people*
> *for everyone to be the best.*

> *I'm definitely really stressed out about whole application process.*
> *What if I don't get in? The business school is really selective at Notre*
> *Dame, for example. Might have to settle if you don't get in where*
> *you want to go…You are leaving behind everything that you've*
> *known your entire life, to go and be with people you haven't met*
> *before in a new state. The whole money aspect is something else.*

> *My sixth grade teacher told us that when you work at the job you*
> *love, you will never have to work a day in your life. I would like to do*
> *something that wouldn't be work doing. I will be able to choose what*
> *I want to do, unlike my parents. I can finally do what I want to do,*
> *not what I have to do.*

Discussion

The focus groups were important to gain the insights of high school juniors and seniors from the Milwaukee, Wisconsin area, providing some guidance for the survey development and context to enhance the analysis of the overall findings. Before launching into the focus groups, I had expected that students would talk about actively using a variety of online resources to search for college information; in fact, none of the focus group students mentioned using social media platforms such as Facebook, Instagram, etc. for college search. More were familiar with college forums such as Niche.com and CollegeFactual.com and using Google to search for college websites and programs. It was not possible to extract detailed information from the participants about their specific browsing habits, in an attempt to examine the three types of online browsing – purposive, capricious, and exploratory – outlined by Bawden (1986). A lesson learned in this area is that it would have been more appropriate to explore browsing behavior by direct observation.

The focus group participants also seemed quite reliant on school resources. They mentioned attending college fairs at their schools and meeting with guidance counselors, even though the guidance counselors tended to limit their suggestions to in-state institutions, especially those within the University of Wisconsin System. A handful were more proactive and had reached out directly to college admissions offices and conducted informational interviews or job shadowing (mostly through connections of relatives, though). The in-person activities they mentioned were included in the survey, as a means to compare how much time they were spending on online versus offline college search.

Regarding the 'when' and the 'where' of college information seeking, the focus group findings did not detect any distinct patterns. The participants appeared to search for information whenever they had the time, at home or at school. In addition, the participants in the focus groups did not hint at resource limitations such as lack of computer access.

An intriguing sentiment expressed in the focus groups was the *need* to visit a college before applying. Despite all of the online college information resources available, including virtual tours, visiting a college in-person seemed to be a prerequisite activity for many of the students. While it understandable that students would need to visit a college before making their final decision, one might expect that they would feel more comfortable about applying without doing so. This finding could be interpreted to mean that online college resources may have a difficult time supplanting more traditional college search activities; thay can be viewed as an enhancement of traditional search, rather than a replacement.

For the most part, students expressed trusting the college information they found online, though there was an undercurrent of awareness that they were being heavily marketed to (e.g. the incredible amount of emails they receive was taken as one clear sign). They also indicated that student voices are more authentic than those of the institutions, both online and offline; these voices could be those of students they know who have attended their college of interest or online testimonial videos. This student feedback influenced my decision to divide the media sources in the survey media viewing exercise into two categories: 'student-to-student' and 'institution-to-student' and verified the inclusion of these categories in **Hypotheses 1D and 3**.

The students' overall feelings about the process included thoughts of having too many options, though this was not a universal sentiment as a few students liked having multiple options (especially when they knew that they would be limited by financial realities once they had offers in hand). The high level of competition that they sensed seemed to add to their anxiety about the college search and application process, in addition to obvious parental pressure. It should be noted that this group of students, as a relatively small sample from public schools that are not on the extreme high end of the college preparatory spectrum, was not representative of the ultra-competitive high school environments that exist in more affluent areas in larger US cities, especially on the coasts. While I did not collect family income data from the focus group students, it was obvious that these students' families did not have the money to support tuition at 'name'

private colleges or even mid-tier out-of-state private colleges, at least without significant financial aid (and unfortunately, in conversations I had with some of the students after the set focus group questions were finished, it seemed that many of them did not realize that there is significant financial aid available to students in lower income brackets). So, in reality, their college options were probably even more abundant than they realized.

As was expected given all of the stories about 'helicopter' parenting in the news and high school and college advising offices (Lythcott-Haims 2015), students mentioned that their parents were guiding them throughout the process, sometimes with a heavy, if well intentioned, hand. Parents used email and texting to send their children college information, and bookmarked relevant websites. Parents play a role in helping students organize their college information, though some students indicated that they are quite capable of doing so. One first-generation propective college student shared that she used Cornell Notes (Cornell University 2016) to analyze her college options; Cornell Notes are an information organizing system that she learned how to use in her college mentoring program. In order to make students more self-sufficient gatherers and analyzers of college information, more tools such as this could be provided to students, ideally by their school counselors or teachers. As Chung and Newman (2007) point out, organization of information is difficult cognitive work, and students need guidance in this area.

The influence of peers in the college search process was apparent in the comments that students made about "everyone" going to the University of Wisconsin-Madison, for example. However, it is difficult to separate out the role of peer influence from the reality that Madison is Wisconsin's flagship university, and has a solid, nationwide reputation. Madison is also an economically-sound decision given the actual or perceived high cost of many private or out-of-state institutions. In addition, the guidance counselors at many of the focus group participants' high schools seem to fall into this same pattern of thinking, so it is not just their peers who are promoting UW-System schools. It is interesting that a study of a similar age bracket of students in the Netherlands (Constantinedes and Stagno 2011) also

detected that family and friends continue to play a major role in HE decision making, even with other information resources such as social media gaining traction.

Fortunately, most of the students in the focus groups opened up relatively freely and seemed engaged in talking about their college search experience. Altogether, they expressed a sense of excitement about college, tempered by uncertainty about what the future would bring. As Kuhlthau (1991) notes, such uncertainty can be a positive motivator, as a necessary part of the information search process.

Conclusion

The focus groups conducted in the first study provided guidance for the survey development in several key ways. The participants' comments about how they go about searching for college information illuminated the importance of not overemphasizing online activities at the expense of excluding more traditional college search activities. While there were not many participant comments about specific websites or social media platforms that they use, Niche.com was one of the websites mentioned that was then included in the survey media view exercise. Additionally, the focus group finding that students make a distinction between student- and institution-generated online content influenced the division of the media sources in the viewing exercise into two lists: 'student-to-student' and 'institution-to-student' so these could be analyzed in **Hypotheses 1D and 3**.

The themes distilled from the focus group data also provide valuable insight into college search behavior to inform the discussion of the survey findings in *Chapter Nine*. For example, the social presence theory of Robert and Dennis (2005) was updated for this project to include digital media sources according to their level of social presence. In the focus groups, it became apparent that students attach importance to college visits, and this finding may support the contention that the level of social presence is a distinguishing factor for digital media.

The findings from the survey will be presented in the chapter that follows, *Chapter Eight – Research Findings: Survey*.

CHAPTER EIGHT – RESEARCH FINDINGS: SURVEY

Introduction

The data for this study was gathered through an extensive survey completed by a representative sample of 251 high school juniors and seniors from across the US, as described in the previous *Chapter Six: Methodology*. In this chapter, the findings from the statistical tests performed with the survey data will specifically address each of the hypotheses and research questions.

In the introductory section of the survey, participants answered questions designed to gather information on basic demographics, status of their college search, and online habits. Next, they completed Schwartz et al.'s (2002) Maximization Scale and an original Self-Efficacy Scale created for this study, inspired by Bandura (2006). Anchoring this project was a media viewing exercise embedded in the middle of the survey, engaging students with college digital media sources. At the end of the survey, they ranked a list of college decision factors.

First, introductory data will be presented to ground the results in some context, followed by a summary of the variables and descriptive statistics. Next, the statistical tests employed for the analysis will be explained. Finally, the findings of the statistical tests of the individual hypotheses and research questions that are the crux of this study will be revealed.

Introductory Data

Status of college search

The survey participants answered a brief series of questions about the status of their college search, detailed in Table 4 below:

Table 4: Status of College Search

Do you have an initial list of colleges you might apply to?		
Yes	221	88%
No	30	12%
What is the maximum number of colleges that you think you will apply to?		
1	5	2%
2-4	98	39%
5-7	93	37%
8-10	41	16%
11 or more	14	6%
Have you decided on a potential major/program of study yet?		
Yes	193	77%
No	58	23%

The College Board (which administers the Scholastic Aptitude Test for college admission) recommends on its website that students submit five to eight applications (College Board 2016) and the participants' replies to this question align somewhat with that recommendation: 39% indicated that they planned to apply to 2-4 colleges, and 37% indicated 5-7 colleges. It is important to note that college application fees fall in the range of approximately $40-75 per application, with many institutions offering fee waivers to students with financial need; nonetheless, there are likely many students from middle-income families who may balk at paying fees and do not feel comfortable requesting fee waivers.

Online habits

To keep the survey at a manageable length, only one question was included to gauge the average amount of time that participants are spending online each week. The question was worded such that the estimate was to include time spent accessing websites, using social media, doing homework, listening to music, playing games, shopping, and email. The instructions stated that time spent texting was not to be included. The responses to this question are below in Table 5. Looked at cumulatively, 87% of the study participants reported spending more than 10 hours per week online, while the 17% on the high end of the scale reported spending more than 30 hours online per week.

Table 5: Total Hours Spent Online Per Week

Approximately how many total hours do you spend online per week?		
None at all	0	0%
Less than 10 hours	32	13%
10 hours to 19 hours	112	45%
20 hours to 30 hours	64	26%
More than 30 hours	43	17%

Putting these findings into perspective, the Pew Research Center's *Teens, Social Media & Technology Overview* reports that 24% of American teens age 13-17 go online "almost constantly" with more than half (56%) going online several times a day; only 6% report going online just once per week (2015, p. 2). While this survey did not inquire about the devices students are using to go online (again, for sake of brevity), it is well established that teens' online access is facilitated by widespread access to mobile phones; nearly ¾ of teens have access to a smartphone, and African-American teens are the most likely group to have smartphone access, with 85% reporting such access (Pew 2015, p. 2).

College search activities

The survey participants were also asked to indicate the total number of hours thus far that they had spent on college search activities. The mean number of hours per activity are displayed in Figure 11 below. The study participants had spent the most time (M=11.61, SD=9.70) talking with friends and relatives about their college options. The second most common college search activity per the survey data was reviewing college (.edu) websites (M=9.37, SD=8.33). Overall, the least time intensive activity was attending college fairs or information sessions (M=5.15, SD=6.46), though this activity was not very far at the bottom in terms of average number of hours spent; this makes sense in that college fairs and information sessions can be an efficient way to get a lot of information in a relatively short amount of time. Time spent looking at college Facebook pages, Twitter feeds and other social media was also low (M=5.57, SD=7.44), given the average number of hours per week that students had reported being online.

Figure 11: Total Hours Spent on College Search Activities, by Activity Type
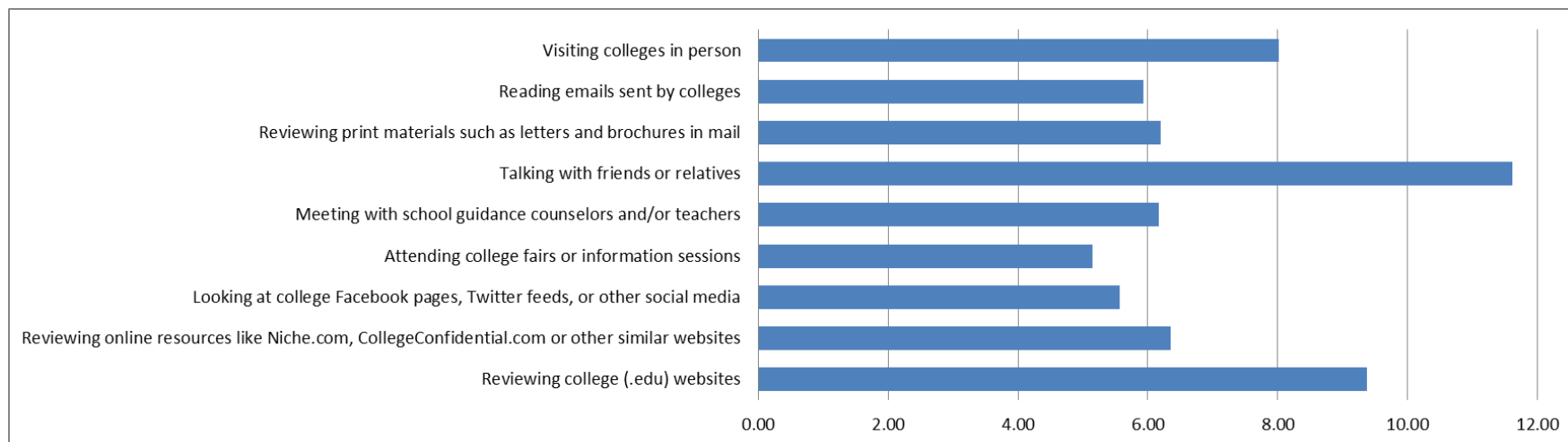
Media viewing exercise

In the media viewing exercise embedded in the survey, two randomized lists of media sources were presented separately, organized into 'student-to-student' and 'institution-to-student' categories (see explanation of these categories in *Chapter Six: Methodology: The Survey Instrument*). While this study was not focused upon determining which media sources are most popular with students searching for college information, nonetheless, it is interesting to note which sources were most clicked on during this exercise. In the student-to-student category (see Figure 12 below), 52% of students chose to view the Snapchat media example. Instagram was the most popular media source in the institution-to-student category, with 45% of students choosing to view it (see Figure 13 below). According to the Pew Research Center, as of 2015, Facebook, Instagram, and Snapchat were the top three social media platforms (in that order) used by American teens ages 13-17 (Pew 2015, p. 2).

Within both categories, there were a significant percentage of students, 39% and 38% respectively, who chose to view none of the media sources presented in the lists. The media sources viewed were tallied to create the GrandTotalViewed variable described below and in *Chapter Six: Methodology*.

Figure 12: Sources Viewed in Media Viewing Exercise – Student-to-Student
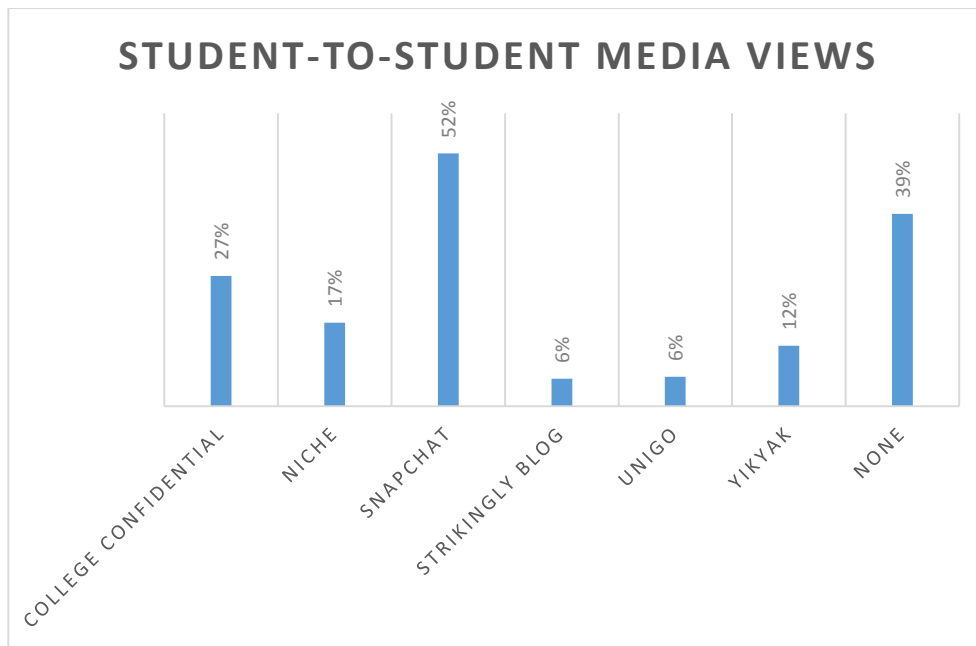
Figure 13: Sources Viewed in Media Viewing Exercise – Institution-to-Student
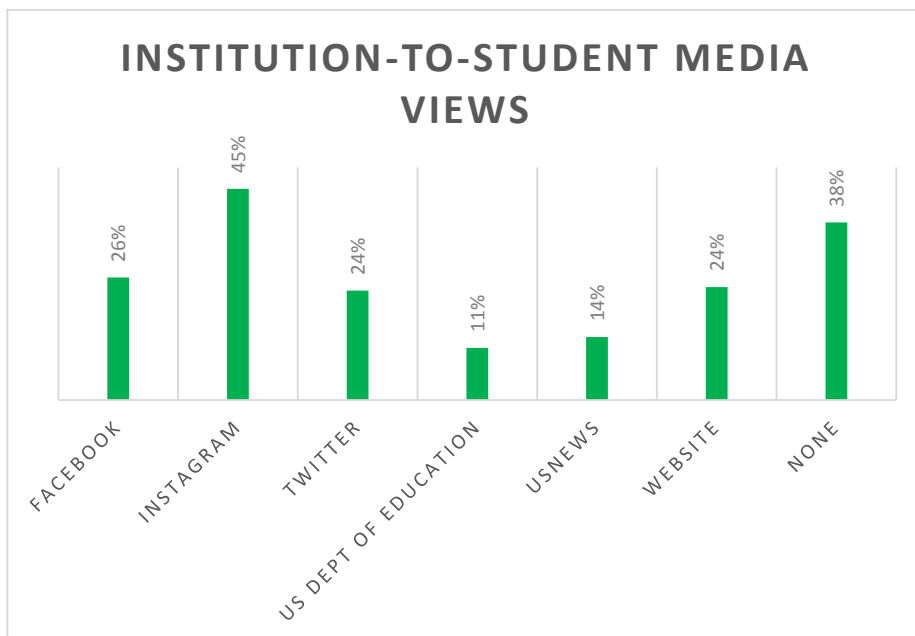
Additionally, purely for exploratory purposes, factor analysis was conducted to elucidate any latent constructs or dimensions in the lists of the media sources (Kline 1994). This analysis was run on all of the media sources from the two lists combined, and the results are below in Table 6.

Table 6: Factor Analysis Pattern Matrix for Media Sources in Viewing Exercise

	Component		
	1	**2**	**3**
Niche	0.717		
CollegeConfidential	0.554		
Unigo	0.799		
Snapchat		0.673	
StrikinglyBlog	0.706		
YikYak	0.534		
USNews			-0.834
USDeptEd			-0.828
Facebook		0.549	
Twitter		0.757	
Instagram		0.839	
Website			-0.587

Extraction Method: Principal Component Analysis

Rotation Method: Oblimin with Kaiser Normalization

It is interesting to note that the student-to-student media sources (the first six listed in Table 6) load as Component 1, with the exception of Snapchat, which loaded with the three most popular social media sites amongst US teens - Facebook, Instagram, and Snapchat – in Component 2. The remaining three media sources – US News and World Report, US Department of Education's College Scorecard, and the institutional website example – also load as a separately as Component 3; these were clearly institution-to-student media sources where it was obvious that the content would be coming from college administrators, not students. For future research, variable construction could be based upon these components.

Variable Summary and Descriptive Statistics

Table 7 below summarizes the variables used in the statistical analysis of the hypotheses and research questions. It is organized into three sections

according to variable type – nominal/dichotomous, ordinal/count, or continuous; this organization feeds in to the upcoming discussion about the statistical tests used. While some of these variables are relatively simple, straightforward measures of the data collected through the survey, others were developed to fit the theory behind the hypotheses; a discussion of this process is included the previous *Chapter Six: Methodology*.

Table 7: Variable Summary and Descriptive Statistics

Variable Name	Description (Coding)	Descriptive Statistics	
Nominal/Dichotomous		**Group 1 Frequencies**	**Group 2 Frequencies**
Gender	Male (1) Female (2)	Male 94 (37.5%)	Female 157 (62.5%)
HighSchoolYear	Junior (1) Senior (2)	Junior 146 (58.2%)	Senior 105 (41.8%)
FirstGen	Status as first generation college student No (1) Yes (2)	No 199 (79.3%)	Yes 52 (20.7%)
CollegeList	Did student have an initial list of colleges for potential applications Yes (1) No (2)	Yes 221 (88.0%)	No 30 (12.0%)
PotentialMajorProgram	Had student decided on potential major/program yet Yes (1) No (2)	Yes 193 (76.9%)	No 58 (23.1%)

MaxSatSplit	MaxScoreSum variable (see below) dichotomized using median split Satisficers (1) Maximizers (2)	Satisficers 125 (49.8%)	Maximizers 126 (50.2%)
Ordinal/Count		**Mean (SD)**	**Frequencies or Range**
GrandTotalViewed	Sum of sources viewed in media viewing exercise	2.64 (2.37)	0 - 11
TotalClicks	Total number of clicks within all heat-mapped media sources viewed	13.47 (17.37)	0 – 111
TotalViewedCat1	Total student-to-student (Category 1) sources viewed in media viewing exercise	1.20 (1.31)	0 - 6
TotalViewedCat2	Total institution-to-student (Category 2) sources viewed in media viewing exercise	1.44 (1.53)	0 - 6
Continuous		**Mean (SD)**	**Range**
GPA	Grade point average (unweighted) estimated on 4.0 scale	3.48 (.48)	1.7 – 4.0
MaxScoreSum	Sum of scores on Maximization Scale items (13 items on 7-point Likert scale); potential range of 7-91	60.86 (8.85)	36.0 – 86.0

SETotalScore	Sum of scores on Self-Efficacy Scale for Internet College Search (8 items scored from 0-100); potential range of 0-800	603.88 (166.72)	38.0 – 800.0
TotalTime	Total time (in seconds) spent viewing all media sources selected	96.41 (155.15)	0 – 1804.87
TotalHoursCollegeSearch	Total hours spent thus far on all college search activities (online and offline)	64.37 (50.07)	1 – 270.0
LowModPresPer	Low-moderate social presence college search media/activities as a percentage of total	50.72 (18.78)	1 – 100.0

Selection and explanation of statistical tests

The statistical tests used in this study were chosen using the following criteria: match for variable type, fit for distribution of the data, and appropriateness for addressing the hypothesis or answering the question. SPSS was the statistical package used.

While the MaxScoreSum variable data is normally distributed, verified with a histogram (see Appendix 9), the SETotalScore data is not (see histogram in Appendix 10). Since a relatively high number of students rated themselves as perfectly confident on the Self-Efficacy Scale, unsurprisingly given young adults' tendency to be "extremely confident in their own ability to navigate digital interfaces" (Loranger et al. 2016), the distribution for this variable is non-parametric, skewed to the right. Transformations of the data (log, square root, and reciprocal) to normalize the distribution were unsuccessful. Square root transformation brought the data somewhat closer to a normal distribution; however, even with reversing the scores and using this transformation method, the

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data remained skewed (with this transformation, the skewness shifted to the left). Given this non-normality, the Mann-Whitney U test and Spearman's correlation coefficient (Spearman's rho) were used to analyze the SETotalScore data. The Mann-Whitney U test compares differences in the ranked positions of scores in the groups, rather than calculating the group means. Spearman's rho only requires ordinal data for the variables, and similar to the Mann-Whitney U test, performs a ranking analysis.

Another specialized statistical test used for the analysis was Poisson regression, which is a generalized linear regression model form of regression appropriate for count data, where the count consists of independent observations. As indicated in the above Table 7: Variable Summary and Descriptive Statistics, four of the dependent variables in this study are count variables.

Hypotheses and Research Questions

Overview of hypotheses, statistical tests, and outcomes

There were a total of six hypotheses tested in this study, with four grouped together in the first set that relate to the media viewing exercise embedded in the survey instrument. These hypotheses were tested by conducting ten statistical tests, listed below in Table 8 along with the outcome for each of the hypotheses.

Table 8: Hypotheses, Statistical Tests, and Outcomes

Hypotheses	Variables	Statistical Tests	Outcomes
H1A: Maximizers will use more media sources in their college search, when compared to satisficers.	GrandTotalViewed, MaxScoreSum	Correlation (Table 9); Poisson Regression (Table 10)	Supported
H1B: Maximizers will consult college media sources for a longer time, when compared to satisficers.	TotalTime, MaxScoreSum	Correlation (Table 9); OLS Linear Regression (Table 10)	Not supported

H1C: Maximizers will be more engaged with college media sources, as measured by number of clicks when viewing a media source, when compared to satisficers.	TotalClicks, MaxScoreSum	Correlation (Table 9); Poisson Regression (Table 10)	Supported
H1D: Maximizers will use fewer student-to-student online and social media sources in their college search, when compared to satisficers.	TotalViewedCat1, MaxScoreSum	Poisson Regression (Table 10)	Not supported
H2: Maximizers will rate themselves lower in their self-efficacy in using social media and online media sources to search for college information, when compared to satisficers.	SETotalScore, MaxScoreSum, MaxSatSplit	Correlation (Spearman's rho); Mann-Whitney U Test	Not supported
H3: Maximizers will utilize more media with low-to-moderate social presence for their college search, such as email and print marketing materials (low) and institution-to-student media (moderate), when compared to satisficers**.**	MaxSatSplit, MaxScoreSum, LowModPresPer	Multivariate Analysis of Variance (Table 11); OLS Linear Regression (Table 10)	Partially supported

Findings for Hypotheses H1A, H1B, H1C, and H1D

Table 9 below presents the correlations and descriptive statistics for the
media sources heat-mapping exercise within the survey, which was used to test
this set of four hypotheses, 1A-D. All of the variables correlated in the expected
positive direction according to ***Hypotheses 1A and 1B***. Additionally, as was

anticipated, supporting **Hypothesis 1A**, there was a significant relationship seen between those who scored high on the Maximization Scale (MaxScoreSum) and the total number of sources that they chose to view (GrandTotalViewed), from all of those presented in the exercise. However, the correlation between the total time that participants spent viewing the sources (TotalTime) and participants' Maximization Scores was not significant and thus could not be said to support **Hypothesis 1B**. The total clicks within the media sources viewed (TotalClicks), as measured by the heat-mapping, did correlate significantly with Maximization Score, indicating that **Hypothesis 1C** could also be supported.

Table 9: Correlations between Maximization Score and Engagement with Media Sources

Variable	1	2	3	4
1. MaxScoreSum	-			
2. GrandTotalViewed (H1A)	.15*	-		
3. TotalTime (H1B)	.06	.55**	-	
4. TotalClicks (H1C)	.14*	.75**	.56**	-

Note. N = 251. *p < .05 **p < .01 (2-tailed)

Additionally, the relationships proposed in **Hypotheses 1A, 1B, 1C, and 1D** were tested by running OLS linear regression or Poisson regression models, as appropriate for each dependent variable. See Table 10 below. To perform a stringent analysis, the models were constructed controlling for socio-demographics including high school year, gender, and status as a first generation student, as well as total hours spent thus far on college search and Self-Efficacy Score. First generation status showed significance only for the TotalClicks dependent variable (**H1C**). Gender was significant as a predictor in the model for TotalViewedCat1 (**H1D**). High school year (junior or senior status) was a significant predictor in the model for TotalClicks (**H1C**). Predictably, high school year was strongly positively associated with the total hours spent on college search (TotalHoursCollegeSearch), since seniors are usually further along in their search than juniors.

The results of the model testing **Hypothesis 1A**, in the column for the dependent variable GrandTotalViewed, suggest that MaxScoreSum is a predictor of

this variable and support the hypothesis. Note that the interpretation of the regression coefficient using Poisson regression differs from that for OLS regression, and the coefficients of continuous predictors (e.g. MaxScoreSum) cannot be as simply used to report the effect on the outcome for a one-unit change in the predictor. Coefficients are on the log scale and effects are in some cases exponentiated (continuous predictors cannot be exponentiated). However, Atkins and Gallop direct that "because of the log link, Poisson regression is inherently nonlinear on the original scale of the outcome" and they suggest that "…to interpret Poisson regression models, predictions can be generated over specific ranges of the predictors with the help of the regression equation" (Atkins and Gallop 2007, p. 730). Therefore, to complete the analysis, the Poisson regression model was fitted and tested using the means of the predictor variables, with the outcome variable transformed using an inverse log function. The regression equation including the predictor variables that proved significant is as follows:

GrandTotalViewed = -0.357 + 0.013(MaxScoreSum) + 0.001(SETotalScore) + 0.001(TotalHoursCollegeSearch)

With the mean values entered for each of the predictor variables above, and the outcome transformed as described above, the predicted GrandTotalViewed is 2.63, which is very close to the actual mean value for this variable, 2.64. Given this result, the model appears validated, and provides additional support for **Hypothesis 1A**.

The OLS linear regression model entered to test **Hypothesis 1B**, with the dependent variable TotalTime, did not result in any significant predictor variables. Thus, the regression analysis serves as confirmation, in addition to the correlation analysis, that this hypothesis is not supported.

Poisson regression modeling was also used to test **Hypothesis 1C**, and for this model, all of the entered variables showed high significance ($p < 0.01$) in predicting the outcome variable, TotalClicks. This result indicates that **Hypothesis 1C** is supported. The regression equation for this model including all predictors (since all showed significance) is as follows:

TotalClicks = 0.624 + 0.020(MaxScoreSum) + 0.001(SETotalScore) + 0.001(TotalHoursCollegeSearch) + 0.174(HighSchoolYear) + -0.165(Gender) + -0.278(FirstGen)

To test this model, it was possible to enter the means for MaxScoreSum, SETotalScore, and TotalHoursCollegeSearch; however, the other variables are binary, so 0 or 1 was entered for those (HighSchoolYear: 0=Junior, 1=Senior; Gender: Male=0, Female=1; FirstGen: No=0, Yes=1). For example, the predicted TotalClicks for a male junior who is not a first generation student is 9.31; for a female junior who is a first generation student, it is 21.47. In comparison, the mean for TotalClicks is 13.47. Given the significance of multiple predictors, it is not possible to make the case that MaxScoreSum is the most significant predictor variable for TotalClicks, but it is a predictor nonetheless.

The final hypothesis in this set, **Hypothesis 1D**, was also tested with Poisson regression modeling. In this model, MaxScoreSum did show significance as a predictor of TotalViewedCat1. However, **Hypothesis 1D** is unsupported since the relationship between the two variables was positive; had satisficers viewed more student-to-student media sources than maximizers, there would have been a negative or inverse relationship between these two variables.

Table 10: Regression Analysis for Hypotheses 1A, 1B, 1C, 1D, and 3

	GrandTotalViewed	TotalTime	TotalClicks	TotalViewedCat1	LowModPresPer	TotalHoursCollegeSearch
	Poisson	*OLS*	*Poisson*	*Poisson*	*OLS*	*OLS*
	(H1A)	(H1B)	(H1C)	(H1D)	(H3)	
Constant	-0.357	-34.673	0.624***	-1.573***	27.942**	23.421
	(0.313)	(96.270)	(0.142)	(0.472)	(11.334)	(-31.256)
MaxScoreSum	0.013***	0.996	0.020***	0.017***	0.252*	0.318
	(0.005)	(1.130)	(0.002)	(0.007)	(0.133)	(0.370)
SETotalScore	0.001***	0.056	0.001***	0.001***	0.003	0.012
	(0.000)	(0.060)	(0.000)	(0.000)	(0.007)	(0.019)
TotalHoursCollegeSearch	0.001**	0.205	0.001***	0.001	0.034	
	(0.001)	(0.198)	(0.000)	(0.001)	(0.023)	
HighSchoolYear	0.133	-19.003	0.174***	0.019	-5.665**	11.979*
	(0.081)	(20.187)	(0.036)	(0.119)	(2.377)	(6.508)
Gender	-0.120	21.816	-0.165***	-0.275**	1.088	-1.639
	(0.083)	(20.533)	(0.037)	(0.125)	(2.417)	(6.669)
FirstGen	-0.135	12.471	-0.278***	-0.134	7.838	0.138
	(0.094)	(24.465)	(0.041)	(0.140)	(2.880)	(7.914)
Observations	251	251	251	251	251	251
R^2		0.019			0.073	0.019
Adjusted R^2		-0.005			0.050	-0.001
Log Likelihood	-562.359		-2,664.877	-367.692		
Akaike Inf. Crit.	1,138.718		5,343.754	749.383		
Residual Std. Error		155.524 (df = 244)			18.310 (df = 244)	50.258 (df = 243)
F Statistic		0.801 (df = 6; 244)			3.180*** (df = 6; 244)	0.928 (df = 5; 243)

Note: *p<0.1; **p<0.05; ***p<0.01

Findings for Hypothesis 2

Examining **Hypothesis 2**, which proposed that maximizers would rate themselves lower in their self-efficacy in using social media and online media sources to search for college information, the MaxScoreSum and SETotalScore variables were tested for correlation using Spearman's rho (due to the non-parametric nature of the Self-Efficacy Score data). No significant correlation between these two variables was found, $r(249) = .07$, $p > .05$.

Using a median split to define the maximizer and satisficer groups (MaxSatSplit), a Mann-Whitney U test was also performed to examine the differences in the scores on the Self-Efficacy Scale designed for this study. First, I confirmed that the assumptions for use of the Mann-Whitney U test were met including: (1) a dependent variable (SETotalScore) that is continuous; (2) an independent variable (MaxSatSplit) that consists of two categorical, independent groups; (3) independence of observations (between the maximizer and satisficer split groups); and (4) distributions for two groups, the maximizer group and the satisficer group, that have the same approximate shape (see Appendix 11 to compare the histograms for these two groups) (Laerd Statistics 2016). The Mann-Whitney U test did not show a significant difference between the maximizer (Mdn=653.50) and satisficer (Mdn=617.00) groups, U=7051.00, p=.151.

Given these results, **Hypothesis 2** is not supported.

Findings for Hypothesis 3

Multivariate analysis of variance (MANOVA) was used to test for mean differences between the maximizer and satisficer groups (determined with a median split). The MANOVA results are in Table 11 below.

The survey instrument included a series of questions to gather information on the total number of hours that the study participants had spent thus far on a variety of college search activities, online and offline. **Hypothesis 3** was developed to examine, in particular, those activities that could be considered to be low-to-moderate social presence. It proposed that maximizers would utilize more media with low-to-moderate social presence for their college search, such as email and

print marketing materials (low) and institution-to-student media (moderate), when compared to satisficers. Drawing from and expanding upon the model of Robert and Dennis (2005; see Figure 6 in *Chapter Four: Literature Review*), the activities that I categorized as low social presence media include: college recruitment emails (TotalHoursEmails), and college print materials such as letters and brochures received via mail (TotalHoursPrintMaterials). Those falling in the moderate social presence category include: college-sponsored websites (TotalHoursEduWebsites); college Facebook pages, Twitter feeds, or other social media (TotalHoursSocialMedia); online resources like Niche.com, CollegeConfidential.com, and other similar websites/forums (TotalHoursOnlineOther). High social presence activities are those such as: talking with friends or relatives (TotalHoursFriendsRelatives); meeting with school guidance counselors and/or teachers (TotalHoursGuidanceTeachers); visiting colleges in person (TotalHoursCollegeVisits); and attending college fairs or information sessions (TotalHoursFairsInfo).

As is indicated in Table 11, two search activities showed a significant difference in the means between the satisficers and maximizers. Maximizers (M=5.60, SD=7.14) indicated that they spend more time at college fairs and information sessions than satisficers (M=4.70, SD=5.70), at a 99% confidence level (*p*=.01, two-tailed); these are considered high social presence activities.

The means between the satisficers (M=5.37, SD=6.54) and maximizers (M=6.49, SD=7.94) were also significantly different (*p*=.08, two-tailed) for reading college recruitment emails. The maximizers also appear to spend more time reading these emails, a low social presence activity.

Additionally, *Hypothesis 3* was tested with OLS linear regression, examining whether MaxScoreSum would be a significant predictor of LowModPresPer, a variable measuring low-to-moderate social presence activities as a percentage of the total number of hours spent on all types of search activities. The regression model is presented in Table 10 above, alongside the models for the first set of hypotheses. The results suggest that MaxScoreSum is a significant predictor of the

percentage of hours students spent on low-to-moderate social presence college search activities, with maximizers spending a greater amount of time on these activities than satisficers. As was the case with the *H1* models, the regression model for *H3* included self-efficacy, gender, school year, and first generation student status as control variables. HighSchoolYear was a negative predictor of LowModPresPer, meaning that seniors were less likely to spend time on low-to-social presence activities, an outcome that is logical given that seniors are visiting more colleges, going to more information sessions, and spending more time talking to their guidance counselors as the time to submit their college applications quickly approaches.

Since the findings for *Hypothesis 3* were mixed, it was partially supported. This assessment is in alignment with this study as post-positivist research, allowing for some ambiguity and complexity inherent in the findings (Ryan 2006). When the activities are examined individually, maximizers do not appear to have a stronger tendency to participate in college search activities that could be labeled low-to-moderate social presence, at least not across the spectrum of such activities; only one of the five activities in this category (reading college recruitment emails) showed a significant difference in the means, with maximizers participating at a greater rate. However, the regression analysis incorporating a measure of time spent on low-to-moderate social presence activities as a percentage of overall time spent shows significance, indicating that maximizers do spend more time on these activities.

Table 11: MANOVA for Satisficers/Maximizers – Total Hours Spent College Search Activities

	Satisficers Mean	Satisficers SD	Maximizers Mean	Maximizers SD	F	t	df1	df2	Sig.*
TotalHoursEduWebsites	8.94	8.03	9.80	8.64	0.76	-0.82	1	249	0.38
TotalHoursOnlineOther	6.01	7.09	6.70	8.43	2.13	-0.70	1	249	0.15
TotalHoursSocialMedia	5.54	7.56	5.59	7.36	0.22	-0.05	1	249	0.64
TotalHoursFairsInfo	4.70	5.70	5.60	7.14	6.26	-1.11	1	249	0.01
TotalHoursGuidanceTeachers	6.02	6.72	6.33	7.32	0.04	-0.35	1	249	0.84
TotalHoursFriendsRelatives	12.19	9.84	11.02	9.56	2.30	0.95	1	249	0.13
TotalHoursPrintMaterials	5.96	6.71	6.44	7.75	1.69	-0.52	1	249	0.20
TotalHoursEmails	5.37	6.54	6.49	7.94	3.11	-1.22	1	249	0.08
TotalHoursCollegeVisits	8.24	8.99	7.79	8.86	0.01	0.40	1	249	0.94

Satisficers N=125; Maximizers N=126; *two-tailed

Overview of research questions, statistical tests, and outcomes

Six statistical tests were performed to explore the four research questions in this study. An overview of the research questions, statistical tests, and outcomes is provided in Table 12 below.

Table 12: Research Questions, Statistical Tests, and Outcomes

Research Questions	Variables	Statistical Tests	Outcomes
RQ1: Do the propensity to maximize/satisfice or the level of self-efficacy in searching for college information online relate to the types of college search activities that students are likely to engage in?	MaxScoreSum, SETotalScore, Dependent variables measuring the time spent on various college search activities	OLS Linear Regression (Table 13)	Maximizers appear to be more likely to attend college fairs or information sessions. Those with higher self-efficacy in searching for college information on the Internet appear to be more likely to spend time talking with friends and relatives about their college search.
RQ2: Do high school students become more confident in searching for college information online as they gain more experience doing so?	SETotalScore, HighSchoolYear	Mann-Whitney U Test	No significant difference was found between the Self-Efficacy Scores of the juniors versus the seniors in this study.
RQ3: Is there a relationship between maximizing/satisficing and the relative importance of college decision making factors? Overall, how do the students in this study rank the importance of the various factors?	MaxScoreSum, MaxSatSplit, Variables measuring the importance of various decision making factors	Correlation (Table 14); Multivariate Analysis of Variance (Table 15); Mean Analysis (Table 16)	Maximization Score correlated positively with (1) campus location, (2) attractiveness of campus and/or campus housing, (3) reputation/rankings, and (4) career prospects for graduates. When a median split was used to examine the means of the maximizer vs. satisficer groups, the same four decision factors were ranked

			as most important by maximizers. Overall, the combined group rated quality of education/teaching as the most important decision factor, and secular/non-secular as the least important.
RQ4: Do maximizers take longer than satisficers to decide upon their potential major/program of study?	MaxScoreSum, PotentialMajorProgram	Independent Samples T-Test	Interpreting the results of the *t*-test as marginally significant, those scoring higher on the maximization scale were less likely to have decided upon their potential major/program of study.

Findings for Research Question 1

OLS linear regression analysis, with each dependent variable examined separately, was performed to examine whether Maximization Score or Self-Efficacy Score are related to the types of college search activities that students are likely to engage in. The Beta weights for this analysis are in Table 13 below. The approach to this analysis and its presentation was informed by Ehrenberg's (2008) study of personality and self-esteem as predictors of time spent by young people using different types of communication technologies.

This analysis revealed that students with a propensity to maximize appear to be more likely to attend college fairs or information sessions (note a similar result was observed in the *t*-test analysis testing Hypothesis 4 above).

Interestingly, it was also found that students who have a higher sense of self-efficacy in searching for college information on the Internet tend to spend more time talking with friends and relatives about their college search.

Table 13: Beta Weights for OLS Regression – Time Spent on College Search Activities

	Reviewing college (.edu) websites	Reviewing online resources like Niche, College Confidential or other similar websites	Looking at college Facebook pages, Twitter feeds, or other social media	Attending college fairs or information sessions	Meeting with school guidance counselors and/or teachers	Talking with friends or relatives	Reviewing print materials such as letters and brochures in mail	Reading emails sent by colleges	Visiting colleges in person
Maximization Score (MaxScoreSum)	0.06	0.04	0.08	0.14*	0.02	-0.05	0.05	0.09	-0.04
Self-Efficacy Score (SETotalScore)	0.04	0.04	0.03	-0.04	-0.01	0.14*	-0.02	0.00	0.06

*p < 0.05; **p < 0.01

Findings for Research Question 2

A Mann-Whitney U test was conducted to compare the Self-Efficacy Scores of juniors versus seniors and determine whether seniors might be more confident about their ability to search for college information using the Internet. Before conducting this test, the assumptions for conducting this test were confirmed, following the same procedures outlined above under Hypothesis 2, including an examination of the shapes of the histograms for the junior and senior groups (see Appendix 12). The Mann-Whitney U test did not show a significant difference between the junior (Mdn=635.00) and senior (Mdn=654.00) groups, U=7372.00, *p*=.606.

Findings for Research Question 3

To answer the first question, a correlation analysis was conducted with the Maximization Score variable and the following college decision factors presented in the survey, which participants rated in importance using a Likert scale (1-7, with 1 as not at all important, and 7 as extremely important):

- Programs offered match interests (ImportancePrograms)
- Number of students attending (ImportanceSize)
- Diversity of student body and faculty (ImportanceDiversity)
- Location, e.g. proximity to home and family, climate (ImportanceLocation)
- Attractiveness of campus and/or campus housing (ImportanceQuality)
- Quality of education/teaching (ImportanceQuality)
- Class sizes (ImportanceClassSize)
- Tuition cost and potential financial aid offered (ImportanceCost)
- Reputation/rankings (ImportanceReputation)
- Career prospects for graduates (ImportanceCareer)
- Secular vs. non-secular (religious affiliation) (ImportanceSecular)

The analysis (see Table 14 below) indicated a significant positive relationship between Maximization Score and four factors: (1) campus location, (2) attractiveness of campus and/or campus housing, (3) reputation/rankings, and (4) career prospects for graduates.

Table 14: Correlations between Maximization Score and Importance of Decision Factors

Variable	1	2	3	4	5	6	7	8	9	10	11	12
1. MaxScore	-											
2. ImportancePrograms	.06	-										
3. ImportanceSize	.09	.13*	-									
4. ImportanceDiversity	.11	.27**	.22**	-								
5. ImportanceLocation	.14*	.17**	.24**	.24**	-							
6. ImportanceAttractiveness	.20**	.36**	.25**	.31**	.28**	-						
7. ImportanceQuality	.05	.58**	.15*	.33**	.17**	.32**	-					
8. ImportanceClassSize	.09	.22**	.56**	.26**	.30**	.28**	.22**	-				
9. ImportanceCost	.08	.35**	.14*	.25**	.33**	.35**	.44**	.26**	-			
10. ImportanceReputation	.20**	.26**	.21**	.29**	.22**	.40**	.36**	.19**	.16*	-		
11. ImportanceCareer	.26**	.53**	.16*	.19**	.20**	.41**	.48**	.24**	.32**	.40**	-	
12. ImportanceSecular	.08	.13*	.25**	.19**	.18**	.11	.18**	.28**	.10	.19**	.17**	-
Means	60.86	6.04	4.37	4.58	4.90	5.35	6.28	4.83	5.86	5.17	5.92	4.02
Standard Deviation	8.85	1.18	1.58	1.66	1.63	1.35	1.10	1.54	1.37	1.39	1.24	1.79

Note: N = 251. *p < .05 **p < .01 (2-tailed)

Additionally, MANOVA analysis (see Table 15 below) was used to compare the means of the maximizers and satisficer groups, using a median split as discussed in *Chapter Six: Methodology*. Interestingly, significant differences are apparent for the same four decision factors noted in the correlation analysis above (note that ImportanceAttractiveness is on the significance threshold at p = .06, so could be considered marginally significant), with maximizers rating these factors more highly than satisficers.

Table 15: MANOVA for Satisficers/Maximizers – Importance of Decision Factors

	Satisficers Mean	Satisficers SD	Maximizers Mean	Maximizers SD	F	t	df1	df2	Sig.*
ImportancePrograms	6.02	1.20	6.06	1.18	0.00	-0.26	1	249	0.79
ImportanceSize	4.22	1.56	4.52	1.60	0.13	-1.51	1	249	0.13
ImportanceDiversity	4.47	1.56	4.69	1.74	1.40	-1.05	1	249	0.30
ImportanceLocation	4.62	1.67	5.17	1.56	1.74	-2.66	1	249	0.01
ImportanceAttractiveness	5.19	1.34	5.51	1.36	0.07	-1.86	1	249	0.06
ImportanceQuality	6.30	1.03	6.25	1.16	0.35	0.36	1	249	0.72
ImportanceClassSize	4.70	1.49	4.97	1.57	0.09	-1.41	1	249	0.16
ImportanceCost	5.77	1.34	5.94	1.39	0.26	-1.02	1	249	0.31
ImportanceReputation	4.94	1.52	5.39	1.22	2.15	-2.56	1	249	0.01
ImportanceCareer	5.73	1.36	6.10	1.07	3.71	-2.43	1	249	0.02
ImportanceSecular	3.91	1.77	4.12	1.81	0.53	-0.91	1	249	0.36

Satisficers N=125; Maximizers N=126; *two-tailed

Addressing the second question, overall, the study participants rated the perceived quality of education/teaching as the most important factor when deciding upon where to apply to college, and programs offered matching interests as the second most important factor. All factors are listed below in highest to lowest rank order in Table 16. At the bottom of the ranking of the factors were class sizes and secular versus non-secular (i.e. does the institution have a religious affiliation or not). A diverse student body and faculty were also not particularly important to the students participating in this study.

Table 16: Ranking of Importance of Decision Factors

Variable	Mean	SD
Importance Quality	6.28	1.10
ImportancePrograms	6.04	1.18
ImportanceCareer	5.92	1.24
ImportanceCost	5.86	1.37
Importance Attractiveness	5.35	1.35
ImportanceReputation	5.17	1.39
ImportanceLocation	4.90	1.63
ImportanceClassSize	4.83	1.54
ImportanceDiversity	4.58	1.66
ImportanceSize	4.37	1.58
Importance Secular	4.02	1.79

N=251

Findings for Research Question 4

To further examine the ways in which Maximization Scores might vary amongst different groups, I conducted an independent samples t-test to compare the Maximization Scores of students who had answered yes to the question, "Have you decided on a potential major/program of study yet?" with students who had answered no. There was a marginally significant difference in the Maximization Scores of the "yes" (M=60.28, SD=9.23) and "no" (M=62.76, SD=7.17) groups; t (249)=-1.89, p = .060. These results suggest that those scoring higher on the Maximization Scale were less likely to have decided upon their major or program of study at the time of completing the survey.

It should be noted that while the *p* value for this test was not at the 95% level of certainty, it was at 94%, which can be interpreted as significant if 95% is considered an arbitrary threshold. As Simmons et al. (2011) stress in their discussion of researcher degrees of freedom, it is quite possible to manipulate data, analysis, or reporting to achieve a desired statistical result; in this study the data was analyzed as is, even though it could be possible that questionable outliers in the data (that some researchers may have chosen to remove) are skewing the results.

Conclusion

The findings addressing the hypotheses presented and research questions posed have in some cases confirmed expected outcomes and in others, raised interesting questions and possibilities for future research, to be detailed below in *Chapters Nine and Ten*.

In particular, it is notable that hypotheses **H1A** and **H1C** were supported by the findings, since the data for testing these hypotheses was gathered with the somewhat experimental and innovative media viewing exercise embedded in the survey. When this project was originally conceived, I knew that I wanted to emulate naturalistic online information seeking using a survey instrument that could be distributed and completed widely, but I was not sure how to achieve this. Given this result, it appears that the prospects for future research using heat-mapping in this way could be promising, with some adjustments. A weakness with this exercise was the inability to control whether participants completed the survey in a single, continuous session, so it was not perfect.

Of course, there were also lessons learned from the hypotheses that were not supported and the research questions that were left without clear answers. These will also be explored in the concluding chapters.

CHAPTER NINE – DISCUSSION

Introduction

This chapter will include a discussion of the research findings in further depth, in some instances speculating on what this study's findings could mean. This chapter will also explore how the study outcomes connect with the theories presented in the *Literature Review*. This chapter is organized according to the three main areas of research and practice to which this study makes the most significant contributions.

Recommendations stemming from the research findings will be reserved for discussion in *Chapter Ten: Conclusion*.

Contribution I: Maximizing/Satisficing as a Decision Making Style and Its Impact on Information Behavior in College Search

Two of the four hypotheses (**H1A** and **H1C**) designed to test whether there is a relationship between maximizing/satisficing decision making style and online information behavior were supported, as indicated in the survey findings in *Chapter Eight*. Maximizers appear to utilize more media sources in their search, and to be more engaged with media sources (measuring engagement by clicks within the sources). These results serve as additional verification of Schwartz et al.'s theory (2002; 2004) of maximizing behavior, which posits that maximizers will seek out and use more information in their decision making than satisficers, who fall on the opposite end of the Maximization Scale. This study presents a unique contribution to the body of research on maximizing/satisficing in that it focused upon online behavior in college search, using a data collection method that attempted to simulate a naturalistic online search in a non-lab setting. Additionally, this could be the first application of this theory to online college search, which is also a new research area.

Given that this study has shown with a significant degree of certainty that maximizers are more likely to use a greater number sources of information in their college search, it can be deduced that satisficers will

use fewer sources (since they fall on the opposite end of the Schwartz et al. Maximization Scale) and in some cases, avoid information (equating seeking out fewer sources, perhaps none at all, with information avoidance).

This study also exposed some of the preferred college search activities of maximizers versus satisficers, providing some new insight. Maximizers appear to spend more time attending college fairs and information sessions, when compared to satisficers. This behavior fits with Schwartz's (2004) profile of a maximizer, driven to gather information from multiple sources. Maximizers 'go the extra mile' by attending these in-person events (which were classified as high social presence in this study). Maximizers are also more likely to read the multiple college emails streaming into their inboxes, according to the analysis for *RQ1*. Maximizers may have a greater appreciation for email as a low social presence medium. The findings of the regression analysis for *H3*, which showed that Maximization Score was a predictor of the amount of low-to-moderate social presence media used, point in this direction. If maximizers struggle with information overload more than satisficers do (a question not answered directly by this study), they could need more time and space to process college information, which is afforded by a low social presence medium like email; this premise is embedded in *H3*, based on Robert and Dennis's (2005) media richness theory. However, there is a contradiction of *H3*, perhaps, given that the results show maximizers have been found to spend more time at college fairs and information sessions (high social presence) *and* on reading college emails (low social presence). It could be that maximizers' preference for these college search activities is simply due to their propensity to go 'above and beyond' to seek out more information than satisficers. This analysis may be more pertinent in explaining maximizing behavior than the theory of Robert and Dennis (2005).

When the study participants were asked to rate the importance of various college decision making factors, maximizers rated the following factors more highly than did satisficers: (1) campus location, (2) attractiveness of campus and/or campus housing, (3) reputation/rankings, and (4) career prospects for graduates. The latter two factors, reputation/rankings and career prospects, fit somewhat

with Iyengar et al.'s (2006) examination of the job application patterns of college students; the maximizers in their study were intent on career success, as evidenced by the greater number of applications that they submitted. Similarly, the maximizers in this study also placed higher priority than satisficers on career, preferring institutions that claimed to offer better career prospects (i.e. more job options), supported by their reputation/rankings that would build their resumes. Aesthetics apparently matter to maximizers given the importance they attached to campus attractiveness. In the overall rankings of the decision factors presented in the survey, the top four ranked were: (1) quality of education/teaching, (2) programs offered match interest, (3) career prospects for graduates, and (4) tuition cost and financial aid offered. If there were a hierarchy of needs for college decision factors, similar to Maslow's hierarchy, it is likely that these four factors would sit at the bottom of the pyramid, since in a sense they are the 'givens' or 'must haves' for most students; they provide the foundation for a satisfactory college experience. In contrast, maximizers, who seek out 'the best,' would find it important that beyond these basics, the college campus also be attractive. Finally, maximizers also rated campus location as more important than did satisficers. However, in the survey campus location was explained as "e.g. proximity to home or family, climate" so it is not possible to accurately dissect this decision factor in the analysis, since maximizers could have had either in mind when rating its importance.

Contribution II: Self-Efficacy in Searching for College Information Online

The first finding related to self-efficacy in online college search was revealed early on, evident by simply viewing the distribution of the data for the Self-Efficacy Scale developed for this study, with a distribution skewed to the high extreme end of the scale: high school juniors and seniors generally rated themselves as very confident in their ability to search for college information online. Whether their high confidence translates into effectiveness in online college search is a question for another study, which could compare Self-Efficacy Scores against actual online search performance in a lab setting. However, reflective of reality or not, self-efficacy is still a relevant and important measure. As Bandura notes:

"People have to decide whether to invest their efforts and resources in ventures that are difficult to fulfill, and how much hardship they are willing to endure in formidable pursuits that may have huge payoffs but are strewn with obstacles and uncertainties. Turning visions into realities is an arduous process with uncertain outcomes" (2000, p. 124).

Even if high school students are not actually particularly effective in searching for college information online (having potentially over-rated their abilities in their self-assessment), their overall high self-ratings of efficacy may encourage them to put more effort into their college search even when they are facing many unknowns, and this is a positive outcome. Self-efficacy judgements can be more functionally useful when they exceed what one can actually do (Schunk and Meece 2006).

Sweeny et al. (2010) explain that people high in self-efficacy generally perceive themselves as in control; those feeling in control are less likely to avoid information. In this study, information avoidance was signaled by a low number of media sources viewed in the media viewing exercise, and according to the findings, Self-Efficacy Score had limited influence on the number of sources viewed, in comparison with Maximization Score. Self-Efficacy Score was also not a significant predictor of total hours spent on college search (see Table 10), so someone with high self-efficacy would not have spent more time searching online and offline for college information. Thus, Bandura's theory as applied in this study does not appear to explain college search behavior with the clarity that one might expect. It is possible that using other measures of information avoidance could provide a different result, as will be discussion as part of this study's *Limitations* in the concluding chapter.

Hypothesis 2, testing whether maximizers would rate themselves lower in self-efficacy in using social media and online resources to search for college information, was not supported. Lacking evidence of a relationship between online/social media self-efficacy and maximizing tendency, it could be speculated

that this tendency does not influence the level of confidence in an activity such as online college search.

Somewhat paradoxically, the findings for **RQ1** revealed that those high in self-efficacy in searching for college information online appear to be more likely to spend time talking with friends and relatives about their college search. Students with high Internet self-efficacy are the same students spending a lot of time online (Joyce 2011; Tsai and Tsai 2010), and therefore, it could be presumed that they would spend a smaller proportion of their time engaging offline. However, perhaps students who rated themselves highly in self-efficacy searching for college search online experience college search self-efficacy in a generalized sense; their self-efficacy online extends to feeling comfortable and effective with all aspects of the search process. Thus, they would not feel reluctant to reach out to friends and relatives to seek their opinions and advice.

The indeterminate result for **RQ2**, examining whether students become more confident in searching for college information as they gain experience doing so, could indicate that there is a wide variation between students in the timing of their college search activity. One might assume that a high school senior, approaching the January 1 application deadline common for many US colleges and universities (recall that the survey was administered online in late November – early January), would have been actively engaged in college search for at least six months already. However, it is quite possible that even maximizers can be procrastinators, and time management of the college search process could be a topic for future research.

Contribution III: Implications for Digital Marketing

In this study's focus groups, none of the participants voluntarily brought up that they had used social media in their college search, which leaves one wondering if they are purposefully avoiding it as a source of college information. Additionally, the survey data indicated that the mean total number of hours that students had spent looking at college Facebook pages, Twitter feeds, and other social media was only 5.57 hours, just above the activity with the lowest number of

hours, attending college fairs or information sessions (5.15 hours) (see Figure 11: Total Hours Spent on College Search Activities). Students reported spending far more time (9.37 hours) reviewing official college (.edu) websites and talking with relatives and friends (11.61 hours). It may be the case that high school students are more likely to use social media to be social, and view college search as an academic activity, with time spent delegated accordingly (and with equal time devoted to procrastinating). As boyd (2014) and Baron (2010) observed, young people go to great lengths to preserve their privacy online, guarding it from parents and other adults in their lives, so there may not be much precedent to expect that they would be comfortable welcoming college marketing offices into their networked publics, unless they have carefully crafted their online personas in preparation. Whether students are shifting towards using social media for more academic rather than social pursuits is unknown at this point, not yet addressed in the empirical literature. Possibly, as it becomes more standard practice for campus recruiting offices to make it known that they are engaging in tracking demonstrated interest online, for example, students will start seeking out social media and online resources in a deliberate way, knowing that it can impact their admission chances. Or, they may continue to preserve their privacy as best they can and try to limit the amount of college information that reaches them via digital communication channels. As one of the focus group participants complained regarding email, "It feels like I received 20,000 from St. Olaf and lots of small liberal arts colleges… Someone should have told us to set up a separate email when taking PSAT for college spam. I'm too lazy to unsubscribe to emails." Information overload, along with privacy concerns and personal preferences, is also likely influencing those students who do not use social media for college search.

Despite the measures that individual students can take to try to manage their information overload, the dilemma remains, highlighted by Schwartz:

"The avalanche of electronic information we now face is such that in order to solve the problem of choosing from among 200 brands of cereal or 5,000 mutual funds, we must first solve the problem of

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choosing from 10,000 web sites offering to make us informed consumers" (2004, p. 55).

College search is one of the first instances in which young people will begin to feel the effects of information or choice overload, but obviously not the only one, depending upon how much time they spend online already. Schwartz does not view filtering, which is the essence of satisficing, as a maladaptive strategy; rather, it can be a reasonable, logical response to this overload. In the survey media viewing exercise, choosing which social media sources to view or not to view, the filtering may have been commonly achieved with the basic heuristic of familiarity. The most selected media sources in the viewing exercise were those that are most popular with teens (per the Pew Research Center's 2015 report) – Facebook, Instagram, and Snapchat - in keeping with the familiarity heuristic, an individual bias for what is known. Despite all of the media sources that students can select, they may gravitate towards the social media that they are already using on a regular basis, especially if they are pressed for time or overloaded with choices. Furthermore, it should not be overlooked that some students opt out of social media altogether; this may be their own choice, as an information filtering strategy to focus on their schoolwork and other activities, or their parents may have sufficient power to ban them from social media or bias them against it. It is likely that those students without any social media accounts will still access college information online, using websites and perhaps college forums. However, this cannot be determined with certainty by analyzing the survey data, since a question was not included asking specifically about social media platforms used outside of college search, if any.

Conclusion

The contributions of this study are evident in three main areas, spanning theory and practice.

The information seeking behavior of the participants in this study further validated the maximization theory of Schwartz et al. (2002; 2004), confirming that maximizers will use more sources of information when researching their decisions. The maximizers in this study also showed a propensity to engage in particular college search activities more so than satisficers, including attending college fairs

and information sessions, and reading college marketing emails. From a practice standpoint, not directly related to maximization theory, it was intriguing and potentially valuable to note that maximizers rated campus attractiveness and campus location as more important factors in their college decision making than did satisficers.

Self-efficacy was found to be unrelated to maximizing/satisficing behavior in the domain studied, college search. This finding contributes to the body of knowledge on self-efficacy (and maximizing), and points to the necessity of future research that tests actual efficacy, independently rated, against self-efficacy scales that are self-assessments.

A primary focus of this study is on information behavior in online college search, in an environment with a wide and growing array of digital resources for college information. The quantitative data gathered appears to confirm a tendency noted in the focus groups: students may be more inclined to use social media to be social and connect with friends and entertain themselves, rather than treat it as a tool to seek college information. Filtering of information, similar to satisficing behavior, could be a self-preservation strategy employed by students inundated by college information.

The following concluding chapter will recapitulate the new knowledge produced by this study and its implications, and review this study's limitations. It will also include suggestions for future research and provide practical recommendations.

CHAPTER TEN – CONCLUSION

Introduction

This research project has produced new knowledge to inform theory and practice related to information behavior. In particular, the findings will be of interest to those researching or working in the field of higher education marketing. However, given that there are parallels between the marketing of higher education and the marketing of other products and services, this research should have even wider appeal and impact. Additionally, high school students and their parents or guardians and the counselor and educators supporting these students can benefit from this research, and specific recommendations are made to these groups in this concluding chapter.

New knowledge produced by this study

This study has produced new knowledge in multiple areas, with findings that are likely to have an impact on the study of individual differences as they relate to information search behavior.

This research has examined relationships between maximizing and moderating variables previously not considered, including self-efficacy in online college search. It has also added a new level of complexity to the discussion of information overload and its relationship to maximizing by considering the 'paradox of richness' for categorizing digital media according to their level of social presence.

Additionally, it has shown that Schwartz et al.'s (2002; 2004) theory of maximizing behavior can be approporiately applied to the domain of college search. The findings of this study have supported Schwartz et al.'s contention that maximizers will seek out more media sources when searching for college information, in comparison to satisficers. This study has indicated that maximizers will also be more engaged with such media sources, as evidenced in the digital media viewing exercise in the survey.

Furthermore, this study has revealed that maximizers have unique preferences in college search activities, when compared to satisficers. Maximizers

will 'go the extra mile' in their college search by spending more time attending information sessions and fairs, as well as reading college emails.

Overall, this study adds a new and exciting dimension to the body of research on higher education marketing, particularly in the field of digital marketing. Its insights suggest the addition of individual difference traits as a factor in college decision making models.

Limitations

That many in American society experience and suffer negative effects from information or choice overload remains a contested notion, as discussed in the *Literature Review*; definitions and indicators of information overload vary and have not coalesced into a single, reliable, quantifiable measure. Attempting to measure individual perceptions of information overload with a multi-item construct is one step in the direction of clarifying its meaning and impact. An information overload scale, such as the one developed by Williamson and Eaker (2012), would have been helpful as a variable to include in the regression modeling. Without a scale to measure information or choice overload, it was necessary to incorporate a blanket assumption into this project, that information and choice overload do in fact exist. Schwartz et al. (2002; 2004) also work under this key premise, and accept it as uncontested and a condition of modern American society. This study also attempted to simulate a state of information overload in the survey media viewing exercise by providing students with lists of digital media examples from which to choose. Admittedly, these methods were imperfect; however, they produced results that are nonetheless valuable and potentially replicable.

In some respects this study might not be considered generalizable beyond the US, if one considers a state of information and choice overload in college search as a distinctly American condition. Some may see this study's findings as not applicable to non-Western cultures not so afflicted with 'affluenza' or to students from countries with dissimilar educational systems that offer fewer options for higher education. On the other hand, given increased student mobility across national borders, international students aspiring to study in the US and other

Western countries face a similar proliferation of choice and information overload that US students recognize as the norm. There is a conspicuous presence of international students on online college forums like CollegeConfidental.com, for example.

Additionally, this study was not designed to dig very deeply into the behavior of information avoiders, aside from concluding that the survey participants who did not view any media sources or reported a low number of hours engaging in college search activities were in essence, avoiding information. This study was structured such that most likely, potential participants who were avoiding college search altogether would not have clicked through to the survey, since it was framed as a survey for students considering college. Qualitative methods, perhaps focus groups with high school students not decided on going to college one way or the other, would be best suited to exploring why some college students avoid searching for college information.

Beyond collecting information on whether the survey participants were first generation college students, socioeconomic data was not gathered for this research. In retrospect, there may have been some value in knowing family income level and/or information about access to technology. I could have included a question in the survey (as I did in the focus groups) about when and where students are most likely to conduct their online college research, which could have provided some clues about the online college search self-efficacy of students who mainly use their smartphones for this purpose (perhaps because they do not have reliable computer or Internet access outside of school) versus students who may own their own laptops or have access to school-issued computer equipment. Socioeconomic status, particularly family income data, could also influence whether students behave as maximizers or satisficers in their college search. Perhaps students with lower family incomes shift into a satisficer mindset when they perceive that many colleges are beyond their financial reach (even though they could be eligible for financial aid) and then self-limit their options, aiming for 'good enough' with a local institution where they can save money by living at home or starting off at a less expensive community college.

Future Research

As the regression modeling testing the first set of hypotheses indicated, maximization tendency is not the only variable that influenced the number of media sources that the survey participants viewed; however, it did have the largest impact of the variables examined. Future research into maximizing tendency and college information search behavior might incorporate additional variables such as family income, or a variable that scores a student's high school based on the number of students it sends to college. Additionally, recognizing that measurement of information overload perceptions remained elusive in this study, a future study could incorporate an information overload scale as discussed in the *Limitations* noted above.

Another future research goal could involve running an experiment in a lab setting that would allow for individual, controlled observation of the information seeking behavior of maximizers versus satisficers. Individual workstations could be programmed to simulate various conditions of information overload. If one were to be very ambitious (and had adequate funding), eye tracking software could also be incorporated to measure engagement with the online media sources.

Finally, while the results of this study point to a few weaknesses in the theory supporting the hypotheses (for example, self-reports of efficacy appear to be imperfect predictors of online college search behavior), there remains the exciting potential of developing a model of college information search behavior that could be refined through future research.

Recommendations for Practice

For marketing and recruitment professionals

The results of this research project raise some salient questions for those working in HE marketing and recruitment. How can HE marketing professionals take the market intelligence produced by this study into account when targeting their efforts, online and offline? Are they being effective by trying to be all things to all students, or spreading themselves too thin across multiple channels, especially when it comes to social media?

HE marketing professionals typically design social media campaigns with the expectation that students will help them spread their marketing messages. If students are too overloaded with college information and options, they may be less effective in acting as message multipliers. Recognizing this potential, the content and frequency of social media and online marketing should be carefully considered, and quality prioritized over quantity. As Schwartz notes in his discussion of heuristics, "Vivid interviews with people have profound effects on judgment even when people are told, in advance of seeing the interviews, that the subjects of the interview are atypical" (Schwartz 2004, p. 58). Some of the focus group participants echoed this sentiment, affirming that videos of student testimonials can be particularly effective, in the sense that they trust the student voice over that of the institution.

Additionally, the urge to consider pulling back on 'traditional' initiatives such as information sessions on or off-campus and campus visit days, thinking that they can be replaced by less expensive (and perhaps less time consuming) virtual events and social media outreach, should be resisted. Given the findings of this research it appears that some students, particularly students with maximization tendencies, are still interested in participating in on-campus and in-person prospective student events.

HE marketing professionals might also consider using a primarily push rather than pull strategy for social media, since it does not appear that students are widely using social media for college search, at least not at this stage in growth curve for social media usage. In part, such a strategy could be achieved with targeted Facebook advertising, for example, but care should be taken to recognize that some students could view this advertising as 'click bait' if it is not presented in a respectful, subtle way. Interestingly if anecdotally, the parent of a college student revealed to me that her daughter harbored some secret shame that she had succumbed to click bait on Facebook, an ad that led her to choose her college, where she is now happily enrolled. Even though this marketing strategy worked, it seems wise to attempt to either craft advertising more mindfully so it does not smell like click bait, which might be achieved by taking an upfront, humorous

approach to an ad campaign recognizing that students know when they are being marketed to. Another strategy could be to simply recognize that social media may serve to build awareness over time, but cannot be expected to gain clear, measurable results. Acknowledgment of this as a realistic outcome will also take off some of the pressure on social media marketing managers.

In an "ideal" world, we could encourage students to take even more tests to assess their interests and skills, match them with potential career paths, and then create sophisticated algorithms to provide them with a highly customized array of higher education options. IBM Watson's Personality Insights, mentioned in the *Literature Review*, is one move in this direction, and if college search apps are created using IBM Watson or similar cognitive technologies, they might be of special interest to satisficers. (Independent college consultants or coaches offer this service to students, using a less scientific method to help students find colleges that are a best fit, but unfortunately their services are often either not financially feasible for many students, or students do not know that such services exist.)

Of course, Facebook already provides ad targeting based on online behavior, and this is one current option for HE marketers to reach students based on their interests and match them with educational programs, with others sure to follow. As one example looking beyond tracking browsing and clicking, when individuals complete online quizzes shared through social media, they are providing marketers with free personal information that begins to build an individual psychological profile. This is surreptitious and arguably unethical, but it is the reality that we are moving into a new era of digital marketing using more sophisticated targeting. Higher education institutions should be prepared to examine these issues to decide whether they will engage in such marketing practices, developing guidelines or policies.

For educators/guidance counselors

School guidance counselors, in particular, might consider taking a more intrusive approach to advising their students about the college search process, using social media to nudge them along and inform them of online resources to

explore their college options. Using social media for this purpose may also prime students for viewing social media platforms as a resource for more than being social. Castleman (2015) advocates text messaging students as a form of intrusive advising to help prevent 'summer melt,' the loss of students who have been accepted to a college then fail to matriculate. In particular, the focus of his research has been on students from lower-income families, who oftentimes are also first generation college students. In college access interventions in summer 2011 and 2012, personalized text messages were sent to remind students of deadlines such as paying an enrollment deposit, selecting housing, taking placement tests, registering for classes, etc., customized for the students' selected colleges (Arnold et al. 2015). However, one of the difficulties encountered by Castleman and his colleagues was obtaining students' cell phone numbers. Social media may be a more accessible entry point for similar interventions focused on college search.

Hemsley-Brown and Oplatka suggest that "…one of the future purposes of HE consumer choice behaviour research could be to equip prospective students of all ages with a path model that will help them make an effective choice decision based on many personal and institutional characteristics" (2016, l. 2409). This individualized approach is appealing, and it could work quite effectively if it also incorporates individual difference variables such as maximizing tendency. Of course, some of the current platforms such as Naviance, already offer search engines that match students with institutions based on their interests, test scores, etc. Rather, what is being advocated here is a more complex, holistic approach that also takes into account individual psychological differences.

One of the most important outcomes of high school guidance is building self-efficacy in college search. In order to do so, counselors themselves need to be provided with comprehensive knowledge and skills to point students towards the resources best suited for them, online and offline. Unfortunately, it is likely that guidance counselors are also feeling overwhelmed by digital media. Ideally, they should have adequate time and resources allocated by their schools to engage in professional development that will help them navigate the complexity of the online college search environment. Schunck and Meece emphasize that "Self-efficacy is

affected by one's actual performances, vicarious experiences, verbal persuasion, and emotional responses" (2006, p. 87). When counselors build their own self-efficacy in online college search, they may become more effective in being able to use verbal persuasion to convince students that they are capable of conducting a successful college search.

For prospective college students and their parents or guardians

Since it is quite unlikely that high school students will have much self-awareness of their personal decision making style, which is understandable considering that few adults do, exploration of this topic could be very helpful as a starting point for college discussions between students and their parents or guardians. There may be an evident disconnect between the styles of students and their parents, and recognizing this at the outset could smooth the way through the college search and application process. Some of the starting questions for such a conversation could revolve around expectations and decision factors. For example, a parent might ask how many colleges the student thinks she or he will want or need to apply to. Some sort of a worksheet that rates the importance of decision factors, or even an informal discussion guide that walks through these one by one, could encourage thoughtful conversation that brings to light some of the factors that may be important to the student, but not the parent. Providing a personal example, I found that my own daughter was very intent on knowing what she would major in before she would even begin considering which colleges she might include in her choice set. As a former undergraduate student academic advisor, I resisted her approach at first, telling her that it was too early for her to feel like she needed to know her intended major, and that she could feel free to explore different majors in her first semester or two; most of the liberal arts colleges she was considering would have a decent array of programs from which she could choose later. However, after she dug in refusing to move the conversation further, I realized the error of my reasoning and failure to see things from her point of view, and we shifted to an approach that acknowledged our different decision making styles. For her, it was easier to narrow her options using an intended major as a filter. (This is the same young woman, now nineteen and a college sophomore, who

still allows me to pick out clothes for her since she does not like to be overwhelmed by shopping, so that should have been my first clue to her decision making style!) Sometimes constantly reminding high schoolers that they have many, many options for higher education is not the best approach, particularly when one is trying to assist a satisficer.

Of course, not all students, especially first generation college students, will have parents or guardians who are comfortable with having these discussions, perhaps due to lack of knowledge or college experience, or unwillingness to have difficult conversations that lead to revelations about finances. In these cases, it is inevitable that students will be left somewhat on their own to figure things out. As the survey data indicated, students spend time talking with friends and relatives too, and they can remain as valuable contributors to the college search process, along with school guidance counselors.

Students researching their college options should also take note of decision framing, that is, how options are presented to them. Ideally, they will be in control of their own decision making process and not let others - counselors, parents, marketers, etc. - frame their decisions in such a way that the framing is unrealistic and not relevant to their own wants and needs: "We may go to the wrong school, choose the wrong courses, embark on the wrong career, all because of the way in which the options were presented to us" (Schwartz 2004, p. 74). It is also easy for students to get caught in peer feedback loops, and social media facilitates this by amplifying the same messages recirculated amongst peer groups. For example, if students are regular visitors to online college forums, they get the impression from those forums that all students are dead set on finding 'the best' name-brand college out there and have stratospheric GPAs and test scores, when this is obviously not the reality. As Schwartz advises, they should act as choosers rather pickers: "A chooser makes decisions in a way that reflects awareness of what a given choice means about him or her as a person" (ibid., p. 76).

Finally, Schwartz offers some helpful advice for maximizers and satisficers alike, that students conducting their college search should take to heart:

> "We seem to do our best thinking when we're feeling good. Complex decisions, involving multiple options with multiple features (like "Which job should I take?") demand our best thinking. Yet those very decisions seem to induce in us emotional reactions that will impair our ability to do just the kind of thinking that is necessary" (ibid., p. 132).

Beyond all of the recommendations offered in these concluding remarks, students should remember the importance of staying calm and taking care of themselves, both physically and mentally, during the college search and application process. It can be an extremely stressful time for some students. It is important for students to stay focused and true to their own goals and values, while recognizing that there are many others who can provide support along the way.

A reflection of my journey

Given the topic of my thesis research, I find it ironic that I discovered the University of Bath's Doctorate of Business Administration-Higher Education Management program by conducting an online search that was not particularly extensive, not knowing what I might find beyond the standard Education Doctorate (EdD) and PhD programs that would allow me to focus on international education (the field in which I work). I was not even thinking of completing a program abroad, since there are many programs here in the US that would have been suitable (even if quite expensive). I do not remember the online path that led me to the University of Bath website. Looking back, I would say that I conducted my search like a satisficer would; however, I think of Bath's DBA as so much better than just 'good enough'! I feel very fortunate that I found this program, and that I took the risk to venture to the UK for my part-time doctoral studies. The last time I had been to Bath was in 1990, when I had taken a weekend trip while studying abroad for a year in London, at the School of Oriental and African Studies, and my memories of the city were positive but pretty fuzzy given that I had visited twenty years prior.

The residentials with my DBA 10 cohort of 21 others from around the world were intense in the best sense of the word. I enjoyed every moment of them, soaking up the content of the lectures, making constant comparisons of HE practices in the US with those of the other countries represented by my classmates, building friendships, and exploring the beautiful city of Bath. The residentials also provided valuable, dedicated reflection and research time that I would not have taken had I decided to study here in my hometown.

From the point of view of a parent of two school-aged children (my daughters were 12 and 14 years old when I started the program in 2011), the DBA program's structure of periodic one to two-week residentials combined with independent study suited my schedule and desired lifestyle rather well. I especially liked that I could focus on the topics that most interested me and contributed to my everyday work. It was also a great bonus that I did not have to trek back and forth to night or weekend classes, a schedule I had pushed through when I completed my MBA while my children were toddlers. The only downside to this

structure that I found was that when I felt too busy with work and family needs, it was perhaps a bit too easy to put my work aside. However, when this did happen (including a major family health crisis), I felt supported by the program and my thesis supervisors and just kept on going when I could pick it back up again. I had hoped to finish the program in around four years, a goal that may have been overly ambitious to start, and it has taken me six years, which now that I look back, is not too bad in the scheme of life.

As I have mentioned, I work in international education, as Assistant Director of Academic Programs in the Center for International Education at the University of Wisconsin-Milwaukee. International education is an established but still growing field given increased student mobility, and I originally thought that I would focus my thesis research in this area. However, in the end, after doing a good amount of reading on international student mobility, campus internationalization, and related topics, I could not find a significant gap in the existing research that really captured my interest. Instead, I discovered a new passion – the study of technology as it applies to the student experience. In an early research idea, I had envisioned scraping data from college forums such as CollegeConfidential.com, big data style, and analyzing it to look for patterns in student anxiety about the college application process. Eventually, I put that plan aside (in part, since it proved impractical to gain permission for the scraping) but remained fixated on studying how students use technology to search for information about college. I have long been interested in innovative uses of technology and relatively unafraid to venture into unfamiliar areas; for example, not long after my graduation from college, in around 1992, I attempted to set up a trading site for collectibles called "Collectors' Connection," using the pre-Internet technology of a dial up bulletin board service. I could have beaten eBay to it, but unfortunately this was an idea too ahead of its time. Post-DBA, I am not yet sure where my new degree and skills will take me, but am open to many different possibilities.

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APPENDICES

Appendix 1: Maximization Scale (Schwartz et al. 2002)

Participants were asked to rate their level of agreement or disagreement with the following statements using a seven-point Likert scale ranging from 1 (completely disagree) to 7 (completely agree).

1. When I watch TV, I channel surf, often scanning through the available options even while attempting to watch one program.
2. When I am listening to music, I often change stations to see if something better is playing, even if I'm relatively satisfied with what I'm listening to.[3]
3. I treat relationships like clothing: I expect to try on a lot before I get the perfect fit.
4. No matter how satisfied I am with my job, it's only right for me to be on the lookout for better opportunities.
5. I often fantasize about living in ways that are quite different from my actual life.
6. I'm a big fan of lists that attempt to rank things (the best movies, the best singers, the best athletes, the best novels, etc.).
7. I often find it difficult to shop for a gift for a friend.
8. When shopping, I have a hard time finding clothing that I really love.
9. Choosing movies to watch is really difficult. I'm always struggling to pick the best one.[4]
10. I find that writing is really difficult, even if it's just writing a message to a friend, because it's so hard to word things just right. I often do several drafts of even simple things.
11. No matter what I do, I have the highest standards for myself.
12. I never settle for second best.
13. Whenever I'm faced with a choice, I try to imagine what all the other possibilities are, even ones that aren't present at the moment.

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[3] The original item began with "When I am in the car listening to music…" and it was updated by removing the word "car."

[4] The first sentence of the original item was "Renting videos is really difficult." This item was updated by substituting the sentence "Choosing movies to watch" since "renting videos" is outdated terminology given the prevalence of streaming movies on demand.

Appendix 2: Self-Efficacy Scale for Online College Search (Buss 2017)

Using a new eight-item scale developed for this study, following the guidance of
Bandura for creating self-efficacy scales (2006), students were asked to rate
themselves on a scale of 0 to 100 for the below activities.

1. Sharing information or asking questions about college on social media
2. Keying in a URL in a web browser to open a specific website
3. Posting in online forums or blogs
4. Downloading information or materials provided on a website
5. Using social media such as Facebook, Instagram, or Twitter to locate college
   information
6. Using keywords to search for college information on the Internet
7. Reading messages in online forums or blogs
8. Contacting college representatives using a website form

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.862	.862	8

Inter-Item Correlation Matrix

	SESocialMediaShareAsk	SEOpenWebsite	SEPostingForumsBlogs	SEDownloadingMaterials	SESocialMediaLocateInfo	SEUsingKeywords	SEReadingForumsBlogs	SEUseWebsiteForm
SESocialMediaShareAsk	1.000	.361	.608	.386	.571	.319	.466	.522
SEOpenWebsite	.361	1.000	.408	.478	.327	.455	.405	.398
SEPostingForumsBlogs	.608	.408	1.000	.421	.444	.312	.574	.532
SEDownloadingMaterials	.386	.478	.421	1.000	.459	.463	.501	.492
SESocialMediaLocateInfo	.571	.327	.444	.459	1.000	.293	.443	.361
SEUsingKeywords	.319	.455	.312	.463	.293	1.000	.378	.416
SEReadingForumsBlogs	.466	.405	.574	.501	.443	.378	1.000	.491
SEUseWebsiteForm	.522	.398	.532	.492	.361	.416	.491	1.000

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
SESocialMediaShareAsk	532.35	20986.869	.655	.519	.840
SEOpenWebsite	521.81	22558.227	.550	.343	.852
SEPostingForumsBlogs	544.87	19913.520	.669	.511	.839
SEDownloadingMaterials	522.92	22101.549	.630	.445	.844
SESocialMediaLocateInfo	522.25	22389.383	.574	.408	.849
SEUsingKeywords	521.38	23456.764	.508	.318	.856
SEReadingForumsBlogs	527.40	21267.025	.655	.450	.840
SEUseWebsiteForm	534.18	20920.766	.644	.442	.841

Are you going to be a High School Senior in Fall 2015?

If so, I would like to speak with you about your experience searching for college information. (No worries if you haven't started your college research yet!) I am a doctoral student from the University of Bath (UK), living in Milwaukee, and am seeking local high school seniors to participate in a focus group. For one hour of your time, you will receive a $15 Starbucks gift card!

If you are interested in participating, please email Tracy at
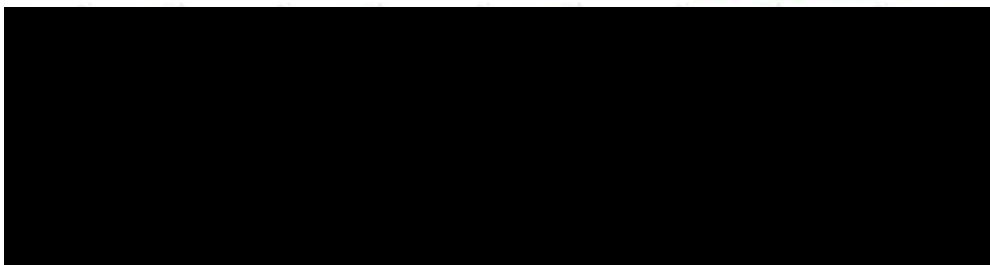
Appendix 4: Focus Group Questions

Q#	Category	Focus Group Question	Theory/Research Reference
1	college choice	Are you considering going to college?	
2	college choice	Have you started to think about where you will apply to college? Do you have a list of colleges that you are interested in?	Chapman (1986)
3	information overload	Do you feel like you have a lot of options when it comes to choosing a college?	Schwartz (2002; 2004)
4	college choice; information behavior	What would you do first when looking for information on which colleges to apply to? Talk to your parents or a sibling? Ask a friend? Make an appointment with a guidance counselor? Search on the Internet?	Litten and Brodigan (1982); Chapman's Model of College Selection Process (1986)
5	information behavior	Where do you look online for college information? [Try to determine some search patterns and preferences; types and numbers of sites.]	Bawden (1986); Foster and Ford (2003)
6	information behavior	When you are searching online and you cannot find what you are looking for, what do you do?	Simon (1956); Agosto (2002); Fidel et al. (1999)
7	task complexity	Do you trust the information you find online?	Hocevar et al. (2014)
8	task complexity; cognitive effort	Are you more likely to search for college information when you are at school, or at home? [May lead to discussion of assistance from guidance counselors at school.]	Kuhlthau's Information Seeking Process (1991; 2004; 2012)
9	task complexity	How do you organize the college information that you find online?	Kuhlthau (1991; 2004; 2012); Chung and Newman (2007)
10	college choice	Who might influence you in making decisions about colleges?	Vrontis et al. (2007); Hanson and Litten (1989); Chapman (1986); Jackson (1982)
11	information overload	How does thinking about your future college possibilities make you feel?	Kuhlthau (1991)
12		Do you have any questions for me about how to search for college information?	

Appendix 5: Focus Group Consent Form for Students

Student Consent for Participation in Research Study

I am willing to take part in this focus group that is a component of a study about how high school students search for college information, conducted by Tracy Buss, a researcher from the University of Bath, England (tbuss1@wi.rr.com). I understand that I will be with a group of other students answering questions and engaging in discussion regarding this topic. The focus group should take approximately 1.5 hours of my time.

I am taking part because I want to. I have been told that I can stop at any time, and if I do not like a question, I do not have to answer it. While the focus group discussion will be audiotaped, I will not be individually identified with my answers to the questions in the results of this study. Aside from the focus group participants, no one will know my answers, including my parents or teachers.

Name: _____

Signature: _____

Date: _____

Email address: _____

Age: _____

Appendix 6: Focus Group Consent Form for Parents/Guardians

GUARDIAN AUTHORIZATION FOR RESEARCH STUDY

Your child is invited to participate in a research study conducted by Tracy Buss, from the School of Management at the University of Bath (UK). In this first stage of my research, I am organizing focus groups of fall 2015 seniors at high schools in the Milwaukee area to explore how they search for college information online. The ultimate goal for my research is to improve the quality of college choice decision making by providing students with Internet research strategies that allow them to seek and gather information in an organized, practical, and meaningful way.

If you decide to allow your child to participate, s/he will be asked questions related to the college search process and decision making. The focus group session will be audiotaped.

Any information that is obtained in connection with this study and that can be identified with your child will remain confidential and will be disclosed only with your permission or as required by law. Subject identities will be kept confidential by anonymizing comments made during the focus group session.

Your child's participation is voluntary. If you decide to allow your child to participate, you and/or your child are free to withdraw your consent and discontinue participation at any time without penalty.

If you have any questions about this study, please feel free to contact me (tlb24@bath.ac.uk or (414) 839-5038) or Robin Shields, Director of Studies for the University of Bath's Doctor of Business Administration/Higher Education Management Program (r.a.shields@bath.ac.uk).

Your signature indicates that you have read and understand the information provided above, that you willingly agree to allow your child to participate, that you and/or your child may withdraw your consent at any time and discontinue participation without penalty, that you will receive a copy of this form, and that you are not waiving any legal claims.

_____   _____
Parent/Guardian Name   Student Name

_____   _____
Parent/Guardian Signature   Date

Appendix 7: Survey Participant Demographics

Survey Participant Demographics (N=251)

	n	%
Gender		
Female	157	62.5
Male	94	37.5
High School Year		
Junior	146	58.2
Senior	105	41.8
First Generation College Student		
Yes	52	20.7
No	199	79.3
High School State		
Alaska	3	1.2
Alabama	2	0.8
Arkansas	3	1.2
Arizona	4	1.6
California	29	11.6
Colorado	1	0.4
Connecticut	6	2.4
Florida	13	5.2
Georgia	14	5.6
Hawaii	1	0.4
Iowa	4	1.6
Idaho	2	0.8
Illinois	15	6.0
Indiana	5	2.0
Kansas	2	0.8
Kentucky	2	0.8
Louisiana	4	1.6
Massachusetts	11	4.4
Maryland	3	1.2
Michigan	5	2.0
Minnesota	6	2.4
Missouri	1	0.4
Mississippi	1	0.4
North Carolina	7	2.8
North Dakota	1	0.4
Nebraska	1	0.4
New Hampshire	4	1.6
New Jersey	9	3.6
New Mexico	1	0.4
Nevada	1	0.4
New York	11	4.4

Ohio	8	3.2
Oklahoma	2	0.8
Oregon	1	0.4
Pennsylvania	9	3.6
South Carolina	1	0.4
South Dakota	1	0.4
Tennessee	8	3.2
Texas	17	6.8
Utah	2	0.8
Virginia	5	2.0
Washington	4	1.6
Wisconsin	7	2.8
West Virginia	2	0.8

Appendix 8: Survey Instrument

Q1 Thank you for your interest in taking part in this study regarding college search behavior. I am conducting this survey for my doctoral research at the School of Management in the University of Bath (UK). Only U.S. high school juniors and seniors are eligible to participate. It takes approximately 10 minutes to complete, and those who complete it can enter a drawing for a $50 Amazon gift card. Before taking part in this study, please read the consent form and proceed by clicking the "NEXT" button (green with arrows) in the bottom right corner of the page, if you wish to do so.   CONSENT FORM We confirm that all data will be strictly anonymous, and will be treated with full confidentiality. There is no way we can (and intend) to know your identity. You are free to withdraw from the study at any time. Participation is entirely voluntary. Although you may not personally benefit from participating, we believe that this experience may be an interesting opportunity for you to think about your college search. Your participation will benefit social scientific research. If you freely consent to participate in the study please continue by clicking on the "NEXT" button (green with arrows) in the bottom right corner of the page. Submitting this survey is considered as consent. Comments may be emailed to Tracy Buss at the following email address: T.L.Buss@bath.ac.uk

Q2 Survey Instructions: Please answer the questions in this survey taking as long as you need. However, you should plan to finish it in a single sitting, allowing yourself at least 10 minutes.   Completing your survey qualifies you to enter a drawing for an Amazon gift card. One $50 gift card will awarded per 50 surveys received. Your survey will not be considered complete until you receive the confirmation message at the end.   Note that throughout this survey, you will need to click on the green arrow button in the bottom right corner of the screen to advance to the next question(s). You may need to scroll to the right and/or down to see the green arrow button on some of the survey screens. On a mobile device, this survey is best viewed in landscape mode.

Q3 Are you planning to attend either a two-year or a four-year college?

❍   Yes (1)
❍   Maybe (2)
❍   No (3)
If No Is Selected, Then Skip To End of Survey

Q4 What year are you in high school?

❍   Junior (1)
❍   Senior (2)
❍   Other (3)
If Other Is Selected, Then Skip To End of Survey

Q5 Is your high school in the U.S.?

○ Yes (1)
○ No (2)

Q6 Please enter the name and location of your high school. Note that your survey responses will not be personally identified with you and will not be shared with your high school. If you are homeschooled, indicate this in the box labeled "name of high school" and enter your home city and state.

Name of High School (1)
City (2)
State (3)

Q7 What is your gender?

○ Female (2)
○ Male (1)

Q8 What is your current high school GPA? You can estimate if you don't know your exact GPA.

_____ Unweighted GPA (adjust to 4.0 scale if necessary) (1)

Q9 Did either of your parents attend college?

○ Yes (1)
○ No (2)

Q10 Do you have an initial list of colleges you might apply to?

○ Yes (1)
○ No (2)

Q11 What is the maximum number of colleges that you think you will apply to?

○ 1 (1)
○ 2-4 (2)
○ 5-7 (3)
○ 8-10 (4)
○ 11 or more (5)

Q12 Have you decided on a potential major/program of study yet?

❍ Yes (1)
❍ No (2)

Q13 Approximately how many total hours do you spend online per week, including accessing websites, using social media, doing homework, listening to music, playing games, shopping, and emailing? (Note that texting should *not* be included in your estimate.)

❍ None at all (1)
❍ Less than 10 hours (2)
❍ 10 hours to 19 hours (3)
❍ 20 hours to 30 hours (4)
❍ More than 30 hours (5)

Q14 How many hours, in total, have you spent on your college research so far, engaging in each of the below activities? Note that if your answer is 0 hours, you will need to click on the green dot positioned at 0 to record your answer.

_____ Reviewing college (.edu) websites (1)
_____ Reviewing online resources like Niche.com, CollegeConfidential.com or other similar websites (2)
_____ Looking at college Facebook pages, Twitter feeds, or other social media (3)
_____ Attending college fairs or information sessions (4)
_____ Meeting with school guidance counselors and/or teachers (5)
_____ Talking with friends or relatives (6)
_____ Reviewing print materials such as letters and brochures in mail (7)
_____ Reading emails sent by colleges (8)
_____ Visiting colleges in person (9)

Q15 Are there any other search activities you would like to add that were not mentioned above? If so, please also provide the number of hours spent on each of these activities.

Q16 Please rate your degree of confidence in the following activities by recording a number from 0 to 100 using the scale given below. Note that if your answer is 0, you will need to click on the green dot positioned at 0 to record your answer.

_____ Sharing information or asking questions about college on social media. (1)

_____ Keying in a URL in a web browser to open a specific website. (2)

_____ Posting in online forums or blogs. (3)

_____ Downloading information or materials provided on a website. (4)

_____ Using social media such as Facebook, Instagram, or Twitter to locate college information. (5)

_____ Using keywords to search for college information on the internet. (6)

_____ Reading messages in online forums or blogs. (7)

_____ Contacting college representatives using a website form. (8)

Q17 Please rate your level of agreement or disagreement with the following statements.

	Completely disagree (1)	Disagree (2)	Somewhat disagree (3)	Neither agree or disagree (4)	Somewhat agree (5)	Agree (6)	Completely agree (7)
When I watch TV, I channel surf, often scanning through the available options even while attempting to watch one program. (1)	○	○	○	○	○	○	○
When I am listening to music, I often change stations to see if something better is playing, even if I'm relatively satisfied with what I'm listening to. (2)	○	○	○	○	○	○	○
I treat relationships like clothing: I expect to try a lot on before I get the perfect fit. (3)	○	○	○	○	○	○	○
No matter how satisfied I am with my job, it's only right for me to be on the lookout for better opportunities. (4)	○	○	○	○	○	○	○
I often fantasize about living in ways that are quite	○	○	○	○	○	○	○

different from my actual life. (5)							
I'm a big fan of lists that attempt to rank things (the best movies, the best singers, the best athletes, the best novels, etc.). (6)	❍	❍	❍	❍	❍	❍	❍
I often find it difficult to shop for a gift for a friend. (7)	❍	❍	❍	❍	❍	❍	❍
When shopping, I have a hard time finding clothing that I really love. (8)	❍	❍	❍	❍	❍	❍	❍
Choosing movies to watch is really difficult. I'm always struggling to pick the best one. (9)	❍	❍	❍	❍	❍	❍	❍
I find that writing is really difficult, even if it's just writing a message to a friend, because it's so hard to word things just right. I often do several drafts of even simple things. (10)	❍	❍	❍	❍	❍	❍	❍
No matter what I do, I	❍	❍	❍	❍	❍	❍	❍

have the highest standards for myself. (11)							
I never settle for second best. (12)	○	○	○	○	○	○	○
Whenever I'm faced with a choice, I try to imagine what all the other possibilities are, even ones that aren't present at the moment. (13)	○	○	○	○	○	○	○

Q18 In the next part of this survey, you are going to consider how the following factors could influence your decisions on where to apply to college:

- Programs offered match interests
- Number of students attending
- Diversity of student body and faculty
- Location, e.g. proximity to home and family, climate
- Attractiveness of campus and/or campus housing
- Quality of education/teaching
- Class sizes
- Tuition cost and potential financial aid offered
- Reputation/rankings
- Career prospects for graduates Secular vs. non-secular (religious affiliation)

To help you think through the importance of these factors, you will have the choice to view some different media sources. You may select as many sources as you would like, and there is not a limit on the time you can spending reviewing each one. However, this exercise (and this survey) must be completed in a single sitting (i.e. you cannot walk away to do something else and return to it later). As you review these media sources, you should click on all parts/sections that you review, even if this means you just look at just one part of the source, then decide to move on to another one.

Q19 If you would like to view any of the media sources below, please select your choice(s), or indicate that you are finished.

- ❑ Niche (1)
- ❑ CollegeConfidential (2)
- ❑ Unigo (3)
- ❑ Snapchat (4)
- ❑ Strikingly Blog (6)
- ❑ YikYak (7)
- ❑ None - I'm finished (5)

Q20 Timing

First Click (1)

Last Click (2)

#QuestionText, TimingPageSubmit# (3)

#QuestionText, TimingClickCount# (4)

Q21 Click on the areas of this page that you view as you are scrolling through the image (10 maximum).

[The same format was repeated for each media sources selected on the list. Below, the media samples are presented, though note that the format of the images within the online survey allowed students to scroll within the sources. Here, some of the images were impossible to copy and paste perfectly.]

University of Texas - Austin

f 🐦 g+

| A+ Overall Niche Grade | Ranked #16 Overall | LOCATION Austin, TX | UNDERGRADS 37,083 | TUITION (IN-STATE) $33,842 ($9,798) | ACCEPTANCE RATE 40 % | More statistics … |

Yes I'm interested, let this school know   **Maybe** Bookmark for later   **No** Show me better matches   What does it mean to express interest?

Summary	
School Home	
Statistics	
Rankings	
The Best & Worst	
About the School	
Academics	
Admissions	
Jobs & Internships	
Majors	
Scholarships	
Videos & Photos	
About the Students	
Alumni & Post-Grads	
Diversity	
Drug Safety	
Greek Life	
Guys & Girls	
About the Campus	
Administration	
Athletics	
Campus Food	
Campus Housing	
Campus Quality	
Health & Safety	
Parking	
Technology	
Transportation	
About the Location	

A+ Academics   A+ Campus Quality   B- Health & Safety   A+ Party Scene
A+ Administration   A- Diversity   A+ Local Area   A Technology
A+ Athletics   C Drug Safety   A+ Off-Campus Dining A Transportation
A Campus Food   A Greek Life   B+ Off-Campus Housing A- Weather
B Campus Housing   A+ Guys & Girls   D+ Parking   All rankings …

Reviews   4392 total reviews with an average rating of 3.9

All sections ▼   Sort: Newest ▼

●●●●● College Senior Yesterday

Overall Experience: The diversity and number of courses make my college one of the best school

2 people found this useful

●●●●● College Freshman 2 days ago

Overall Experience: UT Austin is a large school but being involved in smaller organizations such as a sorority or a smaller major makes UT a great environment to go to college!

3 people found this useful

●●●●● College Junior 2 days ago

Overall Experience: The staff is very helpful and willing to work with you. The people here are amazing and kind. A truly pleasant experience so far. The classes are rigorous but not impossible to pass.

2 people found this useful

●●●○○ College Junior 4 days ago

Overall Experience: Diversity of people, there are many thing

Frequently Compared   Compare …

Texas A&M University

UCLA

U-M Ann Arbor

Southern California

Students Often Come From

Plano Senior High School

Plano West Senior High School

2 pageviews remaining

2 pageviews remaining

2 pageviews remaining

2 pageviews remaining

2 pageviews remaining

DISCUSS & INTERACT
Forum, Reviews & More

FIND A COLLEGE
Search For Your Best Fit

READ & LEARN
College Articles & Advice

FREE RESOURCES
Tools for Students & Parents

Welcome to College Confidential!

The leading college-bound community on the web

Sign Up For Free

Join for FREE, and start talking with other members, weighing in on community polls, and more.

Also, by registering and logging in you'll see fewer ads and pesky welcome messages (like this one!)

As a CC member, you can:

〉 Reply to threads, and start your own

〉 Create reports of your **campus visits**

〉 Share college **photos** and **videos**

〉 **Find your dream college**, save your search and share with friends

〉 Receive our **monthly newsletter**

Forum Home

Latest Posts

Activity

Best Of...

FIND A COLLEGE

SuperMatch

CampusVibe

Stats Profiles

TOP FORUMS

College Search & Selection

College Admissions

What Are My Chances?

Financial Aid & Scholarships

SAT and ACT Tests & Test Preparation

Parents Forum

Colleges and Universities

Ivy League

FEATURED THREADS

WSJ: A Million International Students Pinch US Admissions — Roger_Dooley

What's up with the 'Million Student March?' — JiffsMom

The Value of University: The Economist's First-Ever College Rankings — JHS

Which College Majors Lead Graduates to Their Parents'

Home / College Discussion / College Admissions and Search / College Majors / Music Major

Academically and Musically Strong Schools?

New Discussion

07-07-2015 at 10:03 pm · in Music Major

triggered
Posts: 5
Registered User
New Member

I'm going to be a senior in the coming fall so I'm seriously considering which schools to apply to right now.

I think I'm good academically, with a pretty decent GPA and SAT score. I've also been told that my extracurriculars should be fine as well, even though they're all centered around music.

But at the same time, I really enjoy playing the piano. I've been playing for around ten years now, and I just can't see myself giving that up when I go to college. Piano is something that I'd like to continue pursuing for the rest of my life. As some background information, I do compete in competitions both locally and internationally. I've soloed with an orchestra before and have also been invited to perform at Carnegie Hall. I realize a lot of people have done these things, though, and I don't think I'm on the same caliber of conservatory students, even though I would say I'm pretty good at the piano.

Either way, though, I would like to double major in piano performance and something else (still trying to figure out the 'something else'). Does anyone have any suggestions for schools that have good piano faculty and that are supportive of double majors with music? Or just any general suggestions? I'm currently looking at the Ivies and some other private schools. Thanks in advance!

f   ↰ Reply

Replies to: Academically and Musically Strong Schools?

#1

07-07-2015 at 10:46 pm

Many, many threads on this subject over the years. (Try a google search.) Here are just a few:

Carleton College Reviews

Northfield, MN

View College Profile

GENDER

Male ○ Female ○ All ○

ETHNICITY

Select ▾

MAJOR

Select a major

HOME STATE

Select ▾

POLITICAL VIEWS

Select ▾

GO

CLEAR SEARCH

Search all Carleton College reviews.

Alice

Class Year: Sophomore

What kind of person should attend this school?

Someone who is serious about academics, but also interested in broadening themselves in many other ways. There is a spirit of collaboration over competition amongst the students, too. Overall we tend to be quirky, open-minded, and excited about learning.

Read Alice 's Full College Review >

Ia

Class Year: Freshman

Describe the students at your school.

My classmates (Carls) comes from different places and lifestyles but we intertwine together because of our differences, similarities, interest in learning, humor and integrity to do well.

Read Ia's Full College Review >
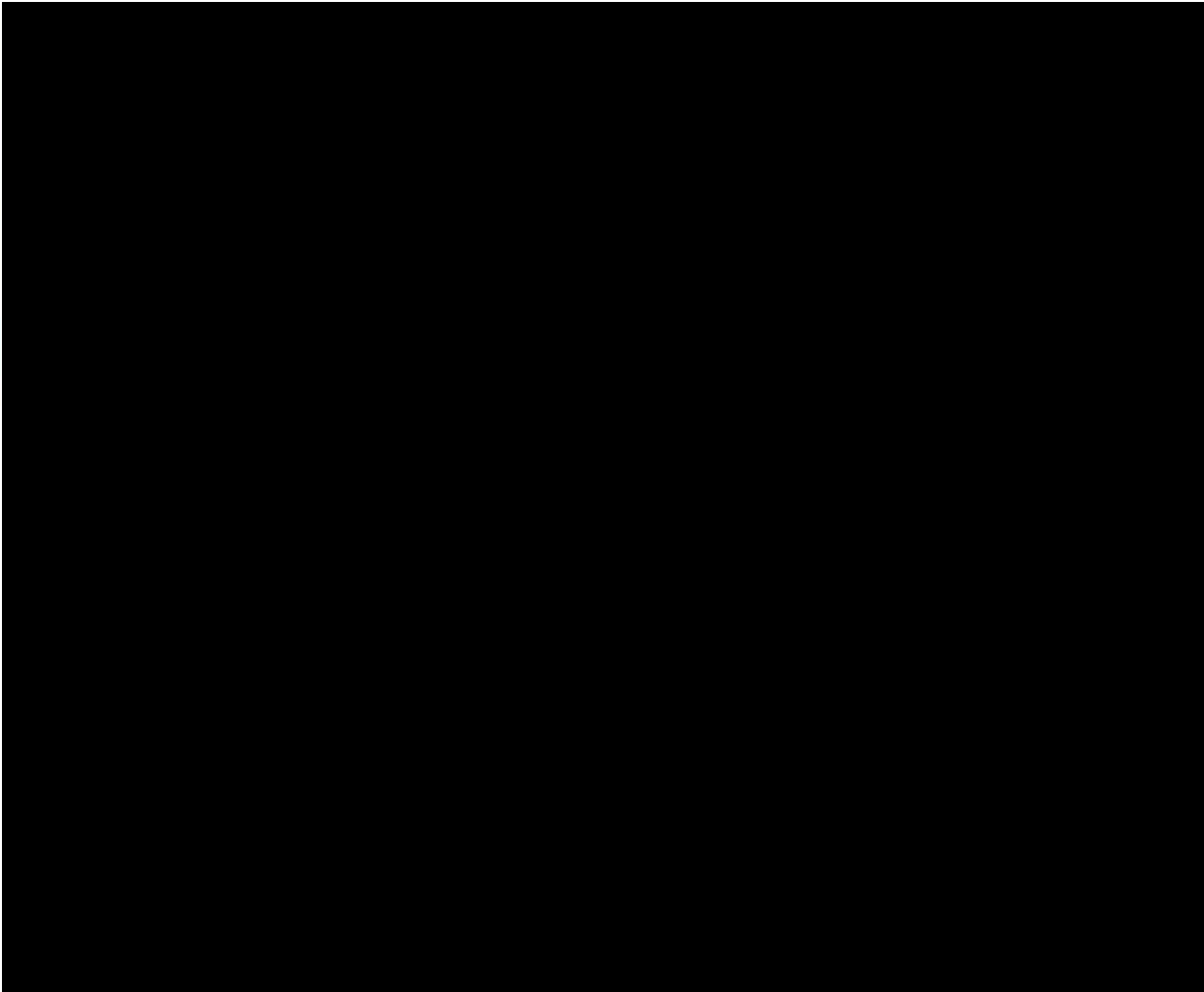
Send a chat   Send a chat

Blog

BC Social

Contact Us

"Ever to Excel"

"Ever to Excel"

"Ever to Excel"

"Ever to Excel"

"Ever to Excel"
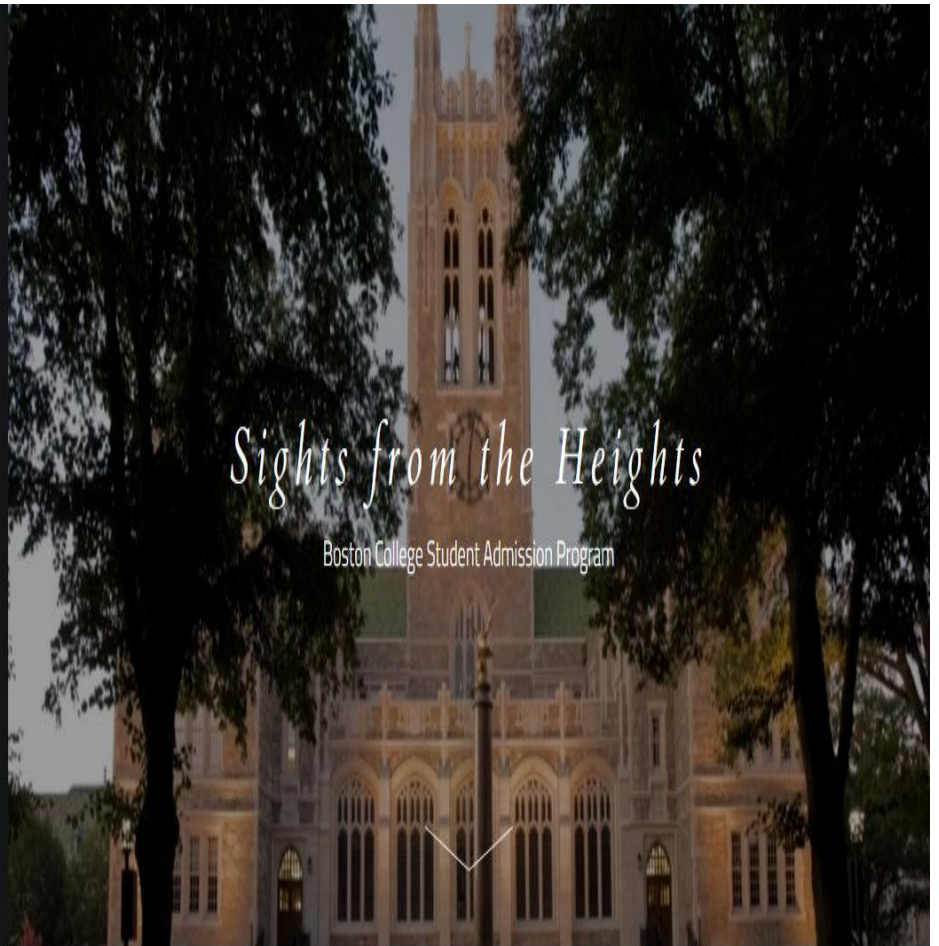
Sights from the Heights

Boston College Student Admission Program

Thank you for visiting our blog in order to get to know some of our students better. We hope that the following posts and pictures will give you a better sense of our students, community, and campus culture.

Football Season

by Abigail Brown '18

Do I miss football season at Boston College? The obvious answer is yes! Football season at Boston College is like no other, especially considering we are Division 1. Not only do I wake up early on Saturday mornings to cheer on our team, I am excited to. The camaraderie and community at Boston College truly are exemplified in the stands of Alumni stadium, as we all cheer on the players, rain or shine. To be honest, I didn't go to one football game in my high school career, yet at Boston College, I haven't missed one. Boston College football is not something to be missed. That being said, football season does inevitably come to a close. Bittersweet as it is, I have come to appreciate all the other extracurriculars BC has

‹ University of North Caro…

My biggest worry about going home is trying to accurately depict what going to UNC is like for friends and family.

20

1 HOUR   2 REPLIES   ⤷ SHARE

Show them your eye bags

3

55m

Comment from my mom last night "you have really dark circles under your eyes" thanks mom 💕

0

4m

Q32 If you would like to view any of the media sources below, please select your choice(s), or indicate that you are finished.

❑ US News & World Report College Rankings (1)
❑ US Department of Education College Scorecard (2)
❑ Facebook (3)
❑ Twitter (4)
❑ Instagram (5)
❑ College Website (6)
❑ None - I'm finished (7)

U.S.News EDUCATION

Education Rankings & Advice   f y

Home   **Colleges**   Grad Schools   High Schools   Online Programs   Community Colleges   Global Universities

National Universities   Liberal Arts Colleges   Applying to College   Paying for College   Find colleges: | College name | | All States ▾ | Go

Home > Colleges > University of South Florida--St. Petersburg

University of South Florida--St. Petersburg

f 8+ y

College   Grad School   Online Programs   All Rankings   Jobs and Internships

Overview

Photos
Map

Ranking Indicators

Applying

Academic Life

Student Life

Campus Safety

Campus Services

Cost and Financial Aid

Top College Resources

Applying to College

Applying to college does not begin or end with the college application.

Finding the Right School

Finding the right school for you is just as important as finding the best one.

Paying for College

Paying for college can be tough - but it doesn't have to be.

Studying in the United States

International students increasingly want to come to the U.S. for college.

Now Hiring   Powered by *aftercollege*

#58 **Regional Universities**
Tie   **(South)**

Summary

University of South Florida--St. Petersburg is a public institution that was founded in 1965. It has a total undergraduate enrollment of 3,995, its setting is urban, and the campus size is 50 acres. It utilizes a semester-based academic calendar. University of South Florida--St. Petersburg's ranking in the 2016 edition of Best Colleges is Regional Universities (South), 58. Its in-state tuition and fees are $5,830 (2015-16); out-of-state tuition and fees are $16,746

2016 Quick Stats

...burg)1st Ave North

Leaflet | Map data © OpenStreetMap
contributors, CC-BY-SA

140 Seventh Avenue South
St. Petersburg, FL 33701
Phone: (727) 873-4873

2015-2016 Tuition & Fees
$5,830 in-state
$16,746 out-of-state

Students
3,995 enrolled

College Scorecard

SHARE THIS SCHOOL

University of Minnesota-Twin Cities

Minneapolis, MN

30,271 undergraduate students

www1.umn.edu

Mounds View
Vadnais Heights
Robbinsdale
Little Canada
North
Lauderdale
Minneapolis
St. Paul
Ne
Map tiles by Stamen Design, under CC BY 3.0.
Data by OpenStreetMap, under ODbL.
Saint

Paying For College

TYPES OF FINANCIAL AID

CALCULATE YOUR AID

GI BILL BENEFITS

4 Year | Public | City | Large

Average Annual Cost ⓘ	Graduation Rate ⓘ	Salary After Attending ⓘ
$17,208	74%	$47,800

— National Average

Costs   ⊖

Average   By Family Income

Tracy Home 1 Find Friends

Kenyon College
College & University

Timeline About

10,905 people like this

3,141 people have been here

Invite friends to like this Page

ABOUT ›

GAMBIER

Kokosing

Gambier, Ohio   Save

(740) 427-5000

http://www.kenyon.edu/

APPS

Kenyon on Instagram

Green for Graduation · Along Middle Path

TWEETS	FOLLOWING	FOLLOWERS	LIKES	LISTS
5,949	11.3K	103K	1,415	4

Follow

355K Tweets about this trend

♥ 2,726   💬 97

14 hours ago

is no diversity in this picture. Not an accurate

ingtonmay

12 hours ago

Add a comment...

225

DEPAUW

ABOUT DEPAUW   ACADEMICS   ADMISSION   STUDENT LIFE   MUSIC   ARTS   ATHLETICS   GIVING

SHARE A PHOTO

SHOW MORE
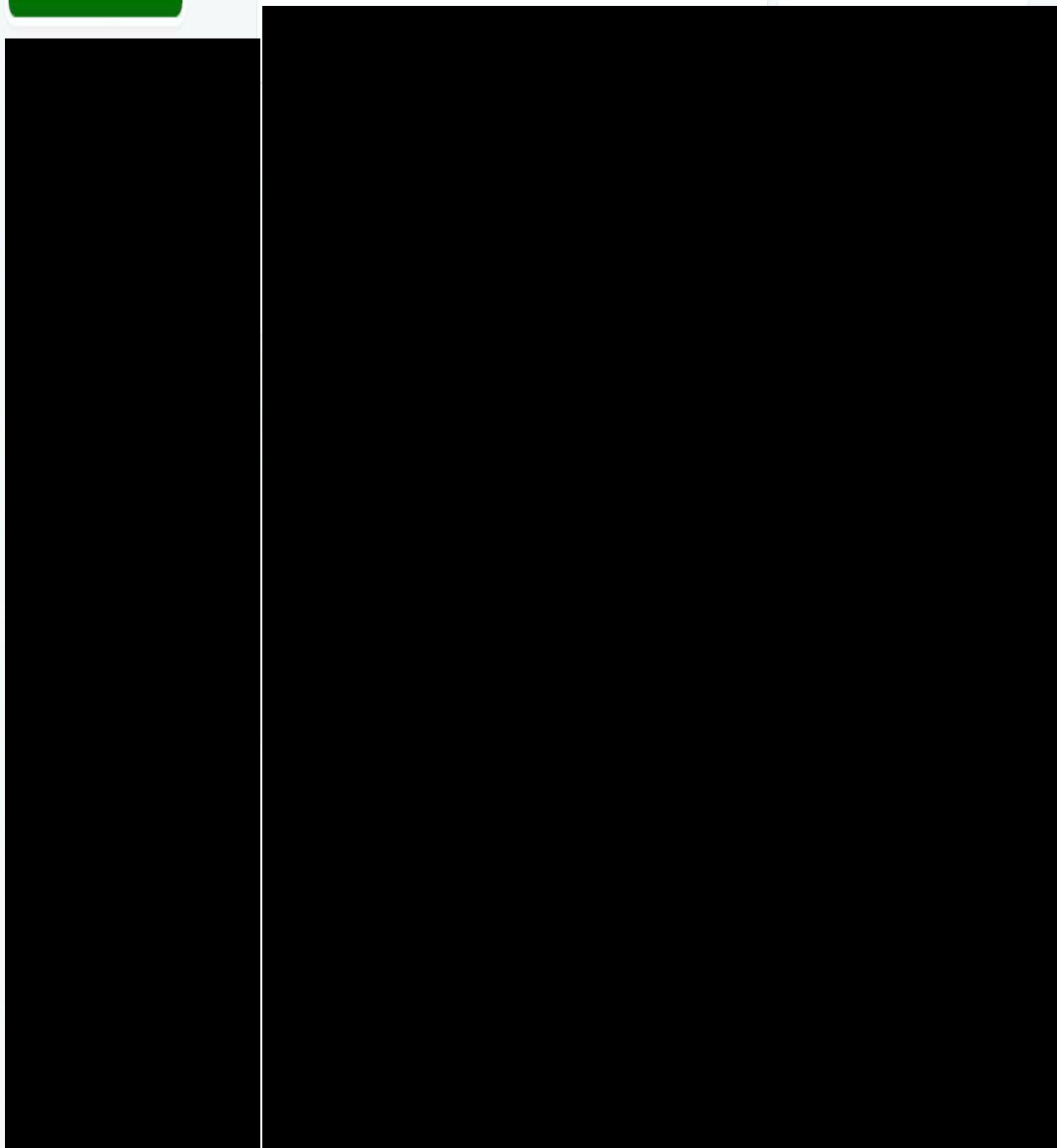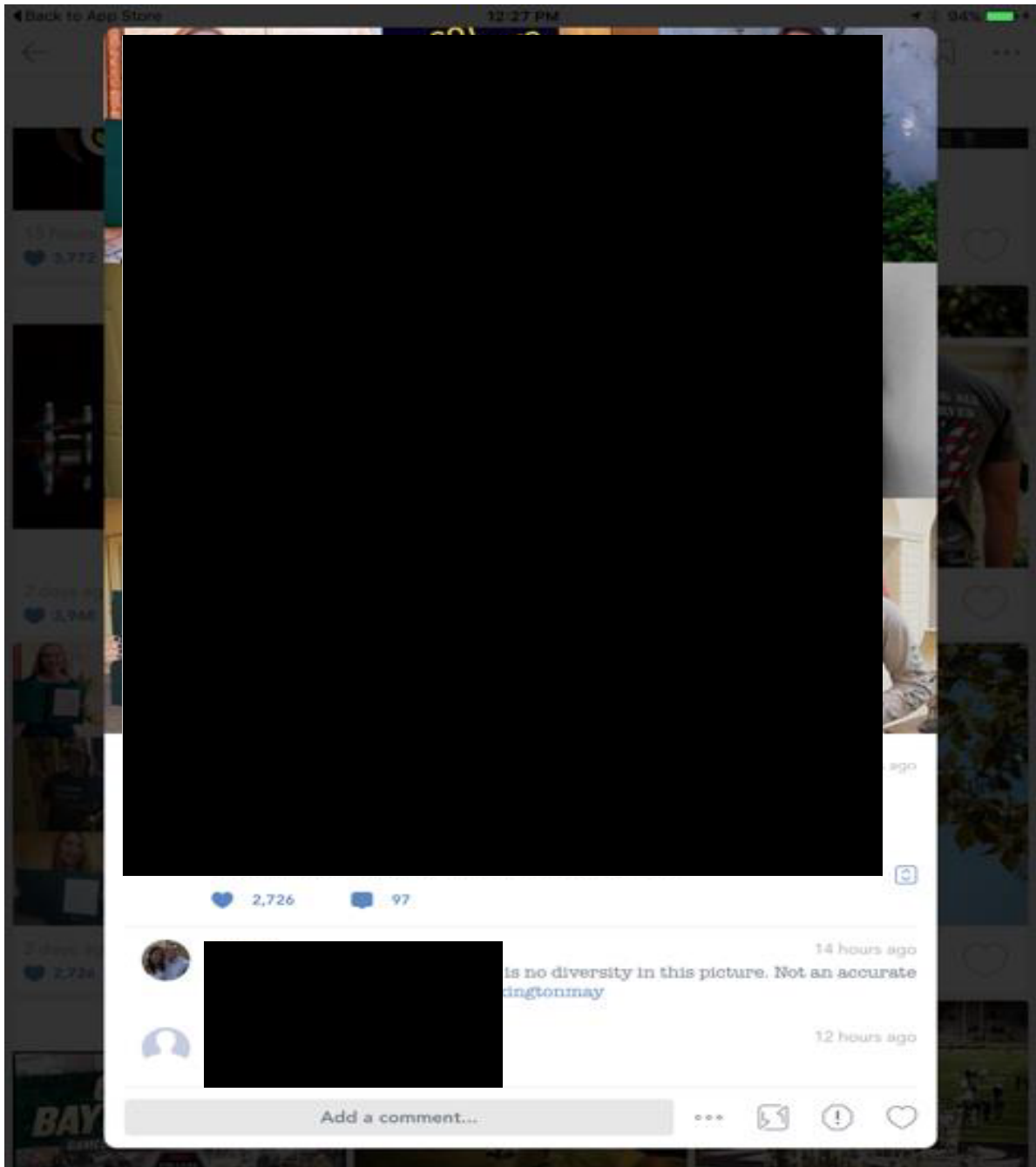
NEW AND NOTEWORTHY   ● ○ ○ ○ ○   CAMPAIGN FOR DEPAUW ❯

Update on DePauw's Presidential Search

Based on input from the DePauw University community, the committee charged with identifying DePauw's 20th president has created a Presidential Search Profile...

Read the Article

THE CAMPAIGN FOR
DEPAUW

UPCOMING EVENTS   ❯   NEWS/ANNOUNCEMENTS ❯

NOVEMBER 20, 2015
DePauw Mourns the Sudden Passing of Art Prof. Catherine Fruhan

NOVEMBER 19, 2015
DePauw Orchestra Offers Thanksgiving Week Concert on Monday

DECEMBER 2, 2015 - 4:00PM

Q45 Your final task is to rate the importance of the following factors when deciding on where you will apply to college.

	Not at all Important (1)	Very Unimportant (2)	Somewhat Unimportant (3)	Neither Important nor Unimportant (4)	Somewhat Important (5)	Very Important (6)	Extremely Important (7)
Programs offered match interests (1)	❍	❍	❍	❍	❍	❍	❍
Number of students attending (2)	❍	❍	❍	❍	❍	❍	❍
Diversity of student body and faculty (3)	❍	❍	❍	❍	❍	❍	❍
Location, e.g. proximity to home and family, climate (4)	❍	❍	❍	❍	❍	❍	❍
Attractiveness of campus and/or campus housing (5)	❍	❍	❍	❍	❍	❍	❍
Quality of education/teaching (6)	❍	❍	❍	❍	❍	❍	❍
Class sizes (7)	❍	❍	❍	❍	❍	❍	❍
Tuition cost and potential financial aid offered (8)	❍	❍	❍	❍	❍	❍	❍
Reputation/rankings (9)	❍	❍	❍	❍	❍	❍	❍
Career prospects for graduates (10)	❍	❍	❍	❍	❍	❍	❍
Secular vs. non-secular (religious affiliation) (11)	❍	❍	❍	❍	❍	❍	❍

Q46 Thank you for completing this survey! If you wish to be entered in the gift card drawing, please provide your email address below. Your address will not be used for anything other than notification should you win a gift card.
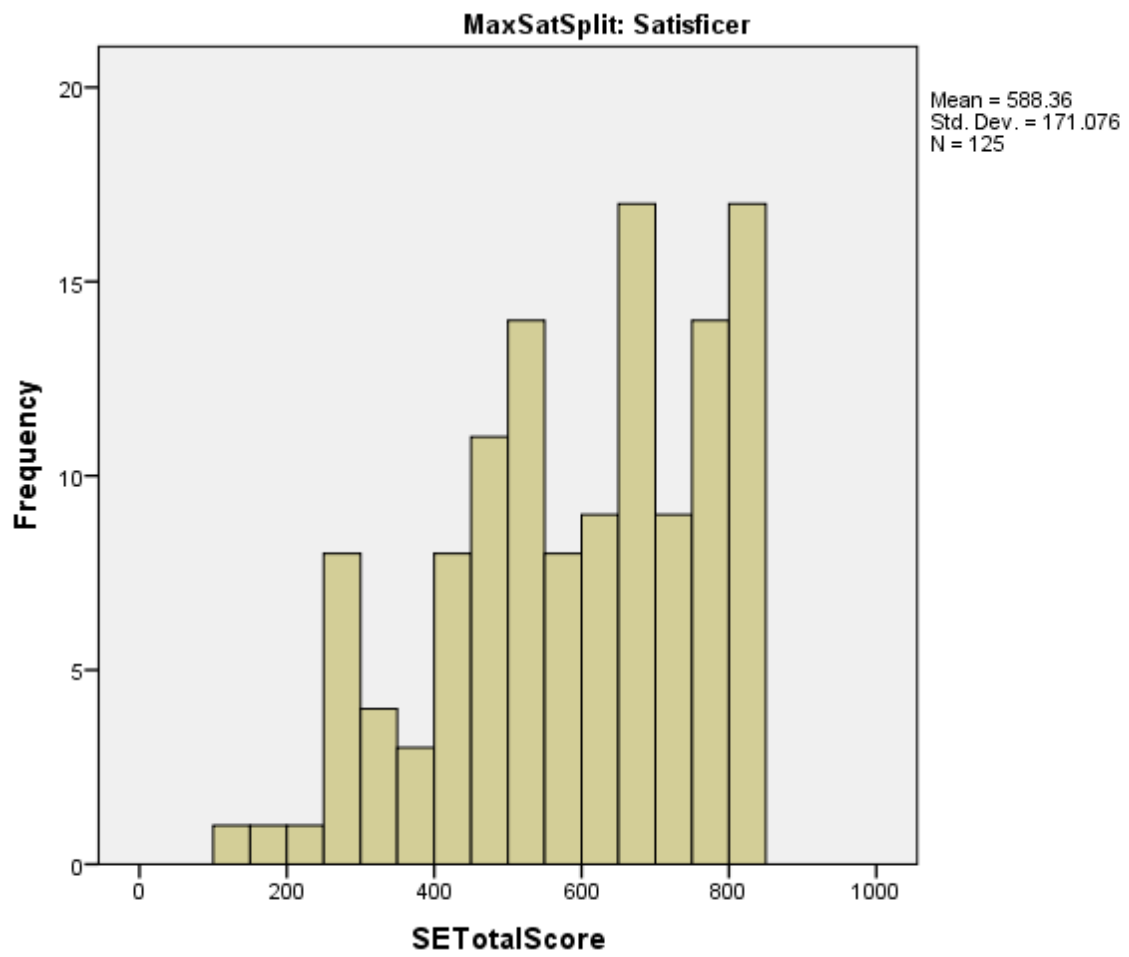
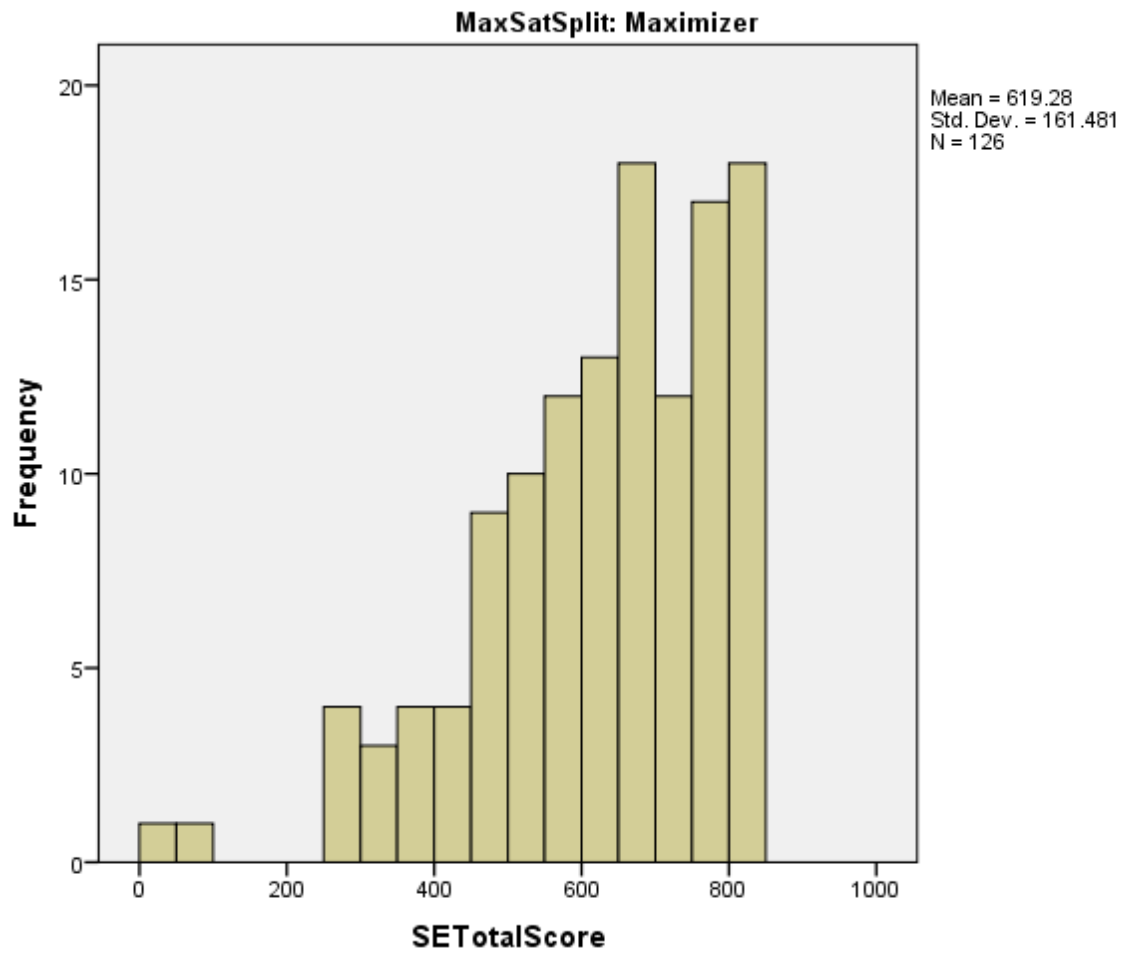Appendix 9: Histogram of MaxScoreSum

Mean = 60.86
Std. Dev. = 8.85
N = 251
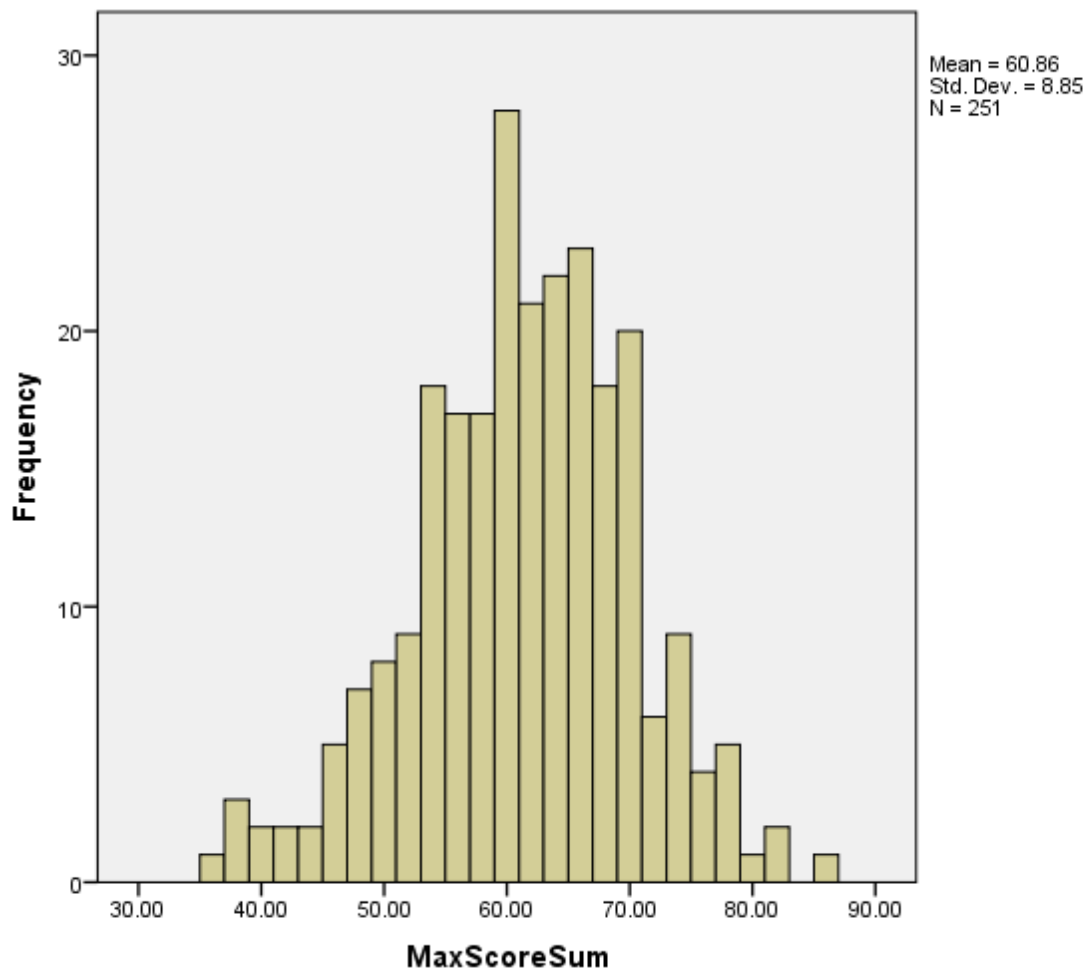
Appendix 10: Histogram of SETotalScore

Mean = 603.88
Std. Dev. = 166.717
N = 251
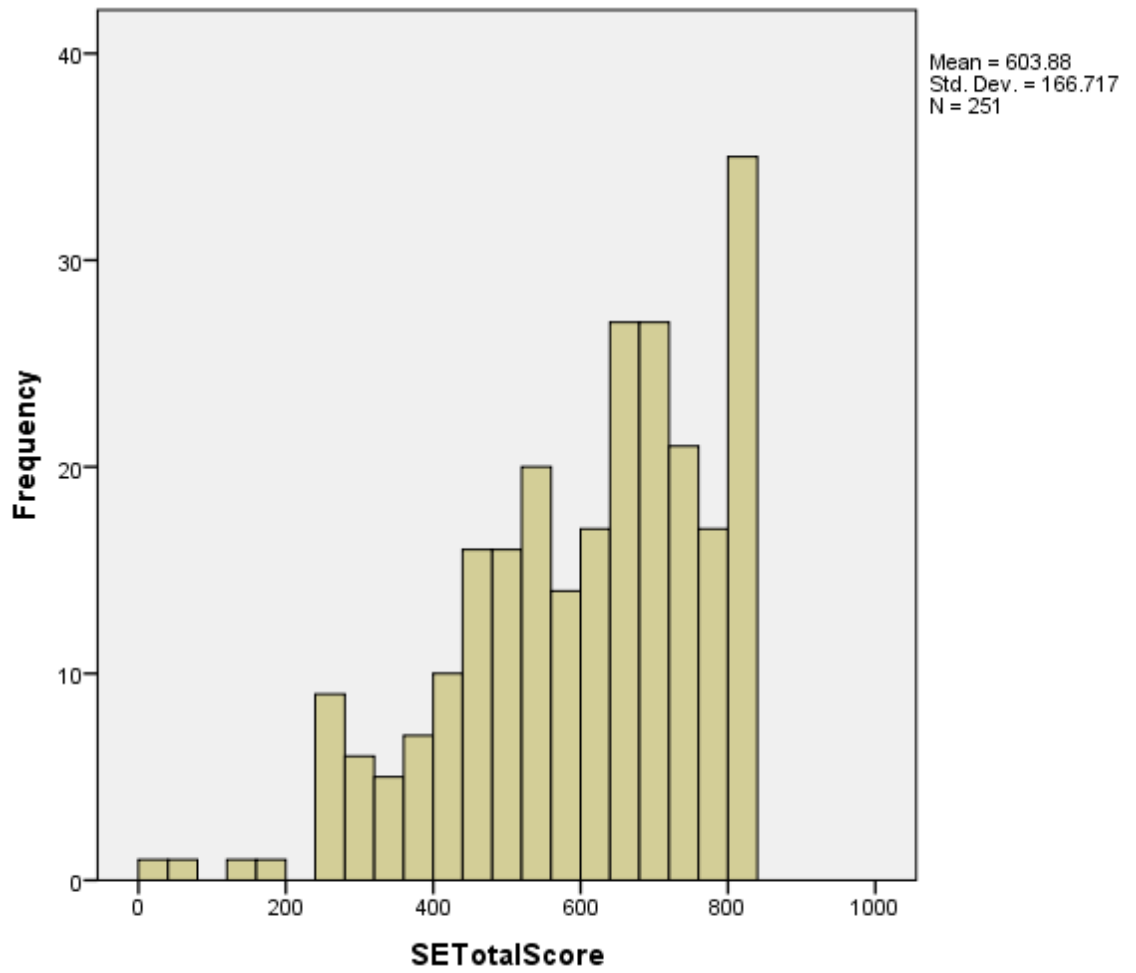
Appendix 11: Histograms to Confirm Usage of Mann-Whitney U Test for H2

MaxSatSplit: Satisficer

Mean = 588.36
Std. Dev. = 171.076
N = 125

MaxSatSplit: Maximizer

Mean = 619.28
Std. Dev. = 161.481
N = 126

Appendix 12: Histograms to Confirm Usage of Mann-Whitney U Test for RQ2

HighSchoolYear: Junior

Mean = 597.71
Std. Dev. = 172.612
N = 146

HighSchoolYear: Senior

Mean = 612.47
Std. Dev. = 158.57
N = 105