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# University Homepage Affordances: The Influence of Hyperlinks on Perceptions of Source Credibility

Patricia DellaCorte

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UNIVERSITY HOMEPAGE AFFORDANCES: THE INFLUENCE OF HYPERLINKS  
ON PERCEPTIONS OF SOURCE CREDIBILITY

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Bachelor of Arts in Psychology

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March 1986

Submitted in partial fulfillment of requirements for the degree

MASTERS OF APPLIED COMMUNICATION THEORY AND METHODOLOGY

at the

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May 2016

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## DEDICATION

This work is dedicated to Chris and Cassandra, whose support and encouragement has meant the world to me.

UNIVERSITY HOMEPAGE AFFORDANCES: THE INFLUENCE OF HYPERLINKS  
ON PERCEPTIONS OF SOURCE CREDIBILITY

PATRICIA DELLACORTE

ABSTRACT

The technology affordances of university website homepages were evaluated to inform the development of prototypical examples of accessible public university and exclusive private university homepages. Affordances are characteristic of the environment that, when perceived, afford or provide opportunities for action (Gibson, 1986). In addition, affordances, such as hyperlinks, also prompt heuristic processes that lead to judgments that are based on peripheral cues rather than substantive information. Integrating the MAIN model (Sundar, 2008) and the Two-Factor Theory (Herzberg, 1966; Zhang & Von Dran, 2000), eye tracking and survey methodology were used to assess differences in perception and credibility judgments of the prototypes developed to represent the website homepages of accessible and exclusive universities.

A content analysis was used to assess hyperlinks and other design features of the website homepages of the 10 most accessible and 10 most exclusive Ohio universities. Consistent with prior research, results indicated relatively little variation among the hyperlinks and design elements of university website homepages. The features were used to develop prototypes representative of the two types of university homepages. Those prototypes served as the manipulated independent variable in an experiment and, although the

manipulation was correctly perceived, the differences were not statistically significant. Correspondingly, the credibility measures, although consistent with theoretical predictions, were not statistically significant based on the type of prototype viewed. This study thus did not provide evidence of a relationship between number of hyperlinks and credibility.

Perceived hygiene and motivator factors however, were significantly positively associated with credibility, consistent with two-factor theory. Additionally, prior experience, particularly with university websites, was associated with the extent to which credibility assessments were not neutral. Participants with more experience were significantly more likely to make non-neutral assessments of credibility than those with less experience, results which are consistent with theory underlying the MAIN model and provide evidence of heuristic processing. This work provides evidence that two-factor theory complements the MAIN model, with potential theoretical and practical benefits. Universities can apply them to develop websites that better meet with user expectations and are thus perceived more favorably.

## TABLE OF CONTENTS

	Page
ABSTRACT .....	iv
LIST OF TABLES .....	xii
LIST OF FIGURES .....	xiv
CHAPTER	
I. INTRODUCTION AND RATIONALE .....	1
II. LITERATURE REVIEW .....	6
Website Design .....	6
University Websites .....	7
Affordances .....	9
Technology Affordances .....	10
Interactivity .....	11
Navigability .....	13
Hyperlinks .....	13
Heuristics .....	14
The MAIN Model .....	16
Research Question 1 .....	19
Hypothesis 1 .....	20
Hypothesis 2 .....	20
The Two-Factor Theory .....	20
The Two-Factor Theory and Web Design .....	21
Hypothesis 3 .....	23

Hypothesis 4 .....	23
Eye Tracking .....	23
Research Question 2 .....	25
Research Question 3 .....	25
Research Question 4 .....	25
Research Question 5 .....	26
Synthesis .....	26
Stimulus Selection Research Questions .....	28
Content Analysis Research Question 1 .....	29
Content Analysis Research Question 2 .....	29
Content Analysis Research Question 3 .....	29
Content Analysis Research Question 4 .....	29
Content Analysis Research Question 5 .....	29
III. METHOD .....	30
Preliminary Investigation for Stimulus Selection Overview .....	30
Preliminary Investigation Sample .....	31
Preliminary Investigation Procedures .....	33
Preliminary Investigation Measures .....	33
Navigation Bar .....	34
Hyperlinks .....	34
Search Features .....	34
Organizational Identifiers .....	34
Primary Image .....	36



Text Boxes .....	36
Font Sizes .....	36
Preliminary Investigation Analyses .....	36
Experimental Design and Stimulus Overview.....	36
Eye Tracking Hardware and Software .....	37
Experimental Participants .....	37
Experimental Procedures .....	38
Experimental Measures .....	39
Manipulated Independent Variable .....	39
Manipulation Check .....	39
Measured Independent Variables .....	40
Do Differences Matter? .....	40
Previous Internet Experience .....	40
Internet Experience .....	40
Internet Usage .....	41
University Website Experience .....	41
Two-Factor Items .....	41
Hygiene Factors .....	41
Motivator Factors .....	42
Dependent Variables .....	42
Eye Tracking Data .....	42
Gaze Path .....	42
Gaze Duration .....	42

Fixations .....	42
Fixation Duration .....	42
Time to First Fixation .....	42
Areas of Interest .....	42
Thought Listing .....	43
Quality of the Website User Experience .....	43
Source Credibility .....	43
Competence .....	43
Goodwill .....	44
Trustworthiness .....	44
Source/Media Credibility .....	44
Experimental Analyses .....	44
IV. RESULTS .....	46
Introduction to the Results .....	46
Preliminary Investigation for Stimulus Selection .....	46
Analysis of Preliminary Investigation .....	46
Summary of Preliminary Investigation Results .....	49
Shared Prototypical Webpage Attributes .....	53
Differentiating Prototypical Webpage Attributes .....	54
Discussion of Preliminary Investigation .....	55
Experimental Results .....	56
Experimental Sample .....	56

Experimental Manipulation .....	56
Research Question 1 .....	58
Hypothesis 1 .....	60
Hypothesis 2 .....	61
Hypothesis 3 .....	64
Hypothesis 4 .....	65
Research Question 2 .....	66
Research Question 3 .....	72
Research Question 4 .....	73
Research Question 5 .....	74
Additional Analyses .....	77
V. DISCUSSION .....	79
Summary of Results .....	80
Preliminary Investigation Results .....	80
Content Analysis Research Questions 1 and 2 .....	80
Content Analysis Research Question 3 .....	80
Content Analysis Research Questions 4 and 5 .....	81
Experimental Results .....	81
Experimental Research Question 1 .....	82
Experimental Hypotheses 1 and 2 .....	82
Experimental Hypotheses 3 and 4 .....	83
Experimental Research Question 2 .....	83

Experimental Research Question 3 .....	84
Experimental Research Question 4 .....	85
Experimental Research Question 5 .....	85
Theoretical Findings .....	86
Practical Recommendations .....	88
Limitations .....	89
Future Directions .....	92
Conclusion .....	93
REFERENCES .....	96
APPENDICES .....	106
A. SOURCES OF CONTENT ANALYSIS DATA .....	107
B. CONTENT ANALYSIS CODEBOOK .....	111
C. CONTENT ANALYSIS RESULTS .....	124
D. WEBPAGE HOMEPAGE PROTOYPES .....	125
1. Accessible University Website Homepage Prototype .....	126
2. Exclusive University Website Homepage Prototype .....	127
E. INFORMED CONSENT FORM .....	128
F. QUESTIONNAIRE .....	129
G. SOURCE CREDIBILITY GOODWILL FACTOR ANALYSIS AND CRONBACH'S ALPHA .....	138
H. CITI CERTIFICATION .....	143
I. IRB APPROVAL .....	145

## LIST OF TABLES

Table	Page
1. Demographic Variables of Accessible and Exclusive Universities .....	32
2. Most Prevalent Hyperlink Categories and Web Design Features .....	47
3. Differentiating Hyperlink Categories and Website Design Features .....	48
4. Similar Website Design Features .....	49
5. Summary of Shared Prototypical Webpage Attributes .....	54
6. Summary of Differentiating Prototypical Webpage Attributes .....	55
7. Manipulation Check Scale and Item Statistics by Condition .....	58
8. Correlations and Reliability of Credibility Scales .....	59
9. Credibility Statistics and Independent Samples <i>t</i> -Test of Differences by Number of Hyperlinks .....	60
10. Descriptive and Independent Samples <i>t</i> -Test, University Website Experience by Neutral and Non-Neutral Credibility .....	61
11. Pearson Correlations and Reliability of Internet Experience and Credibility Scales .....	62
12. Number of Semesters at CSU by Researching CSU Online and Neutral Versus Non-Neutral Credibility .....	64
13. Pearson Correlations of Hygiene Factors with Credibility .....	65
14. Pearson Correlations of Motivator Factors with Credibility .....	66
15. Mean Fixation Durations in Milliseconds and Independent Samples <i>t</i> -Test of Differences by Condition .....	68
16. Pearson Correlations of Primary Navigation Bar Hyperlink Fixation Durations with Credibility .....	73
17. Research Questions and Hypotheses Results .....	75

18. Pearson Correlations Among Variables in Revised Model .....	78
19. Summary of Regression Model Predicting Overall Credibility .....	78
A1.1. Accessible Ohio Universities by Selection Criteria .....	107
A1.2. Exclusive Ohio Universities by Selection Criteria .....	108
A2.1. Web Addresses of Accessible Ohio University Website Homepages .....	109
A2.2. Web Addresses of Exclusive Ohio University Website Homepages .....	110
C1. Content Analysis Results .....	124

## LIST OF FIGURES

Figure	Page
1. The MAIN Model .....	17
2. Research Questions and Hypotheses Integrating the MAIN Model and the Two-Factor Theory .....	27
3. Website Homepage Elements of Interest .....	35
4. Average Number of Fixation Per Respondent on Primary Navigation Bar Hyperlinks, by Condition .....	69
5. Aggregate Heat Map, Accessible University Website Homepage .....	70
6. Aggregate Heat Map, Exclusive University Website Homepage .....	71
7. Adapting the Two-Factor Theory to Incorporate the MAIN Model .....	87
D1. Accessible University Website Homepage Prototype .....	126
D2. Exclusive University Website Homepage Prototype .....	127

## **CHAPTER I**

### **INTRODUCTION AND RATIONALE**

Years ago, students would call a 1-800 number from their parents' land line or drop a postcard in the mail to request information about a university they were thinking about attending. Days or weeks later, print media, shiny brochures and catalogues, would arrive and pile up for the prospective student's perusal.

Nowadays, a student employs their preferred search engine and then clicks on a link to access a university's website homepage. This method is definitely faster and in some ways it's easier for the prospective students. But the change has made it more challenging for universities to manage their image. Whereas print media contained words and photos, digital media is vastly more complex and features interactive content.

Technology affordances are a source of that complexity.

Affordances are visual characteristics of the environment that invite user action. Technology affordances are visual cues that enable user action in a digital environment. In print media, effort is made to select the right words and visuals to convey an organization's desired messages and image. But, on websites, words may be more than words. They may be hyperlinks, words which also act as affordances by providing users



with opportunities for interaction and navigation. In other words, hyperlinks are a type of easily interpretable visual cue that provide website users with opportunities to both interact with webpage content and navigate throughout the site. The users must perceive, recognize, and accurately interpret the affordance to properly act upon it. However, while affordances act as structural features, they are also sources of verbal and peripheral cues. While affording interactivity and navigability, hyperlinks may also cue heuristic processes that prompt credibility judgments (Sundar, 2008). The MAIN model predicts that the heuristics cued by interactivity and navigability affordances prompt credibility judgments, perceptions that have the ability to influence subsequent cognitive processing. The MAIN model thus provides a framework for exploring the relationship between hyperlinks and credibility judgments.

Therefore, seemingly trivial features of the web environment that are nominally related to the message may dramatically skew the interpretation of its meaning. Because of this, much of what is communicated is not perceived as intended. This reality applies to website homepages, a common means of connecting individuals and organizations. Organizations employ websites as a means of both dispensing information and conveying impressions about themselves. However, even well planned communication can be misinterpreted. Thus, to be most effective, the pragmatic considerations that inform web design must also incorporate recognition of the more subtle elements that influence user perceptions.

This study will investigate the influence of university website homepage affordances on credibility judgments. The MAIN model (Sundar, 2008) provides a framework for exploring the relationship between affordances and credibility judgments.

This study also integrates factors related to heuristic processing and credibility judgments. Prior research indicates that user experience facilitates heuristic processing (Chaiken, 1980). Thus, prior Internet experience, particularly with university websites, may influence the degree to which peripheral cues such as hyperlinks are relied upon to make credibility judgments. Further, this study purposefully limits the duration of exposure to the homepage. Thus, access to information and opportunities to take advantages of the affordances are restricted. These conditions force participants to rely primarily on heuristic processes for evaluations of the homepage. In addition, the two-factor theory allows consideration of the influence of expectations on those judgments (Zhang, Small, Von Dran, & Barcellos, 2000). Hygiene and motivator factors play a role in user satisfaction, which is in turn related to perceptions of credibility. Finally, eye tracking methodology was utilized to incorporate aspects of visual attention of which the user may not be consciously aware and thus enable inferences to augment self-report data.

Thus, this study assessed the affordances featured on the website homepages of universities. The appearance of websites and affordances is interesting and relevant for several reasons. Each year, a new crop of potential students relies on university websites for information that may influence their academic choice. Therefore, the stakes are high. Secondly, while the users are not likely to be novices to web use, it may be their first time to visit university websites. It follows that first impressions may be critical to the decision making process. Prior research has shown that Internet users come to expect certain types of features based on previous experience (Worwa & Stanik, 2010). Those user expectations can influence perceptions of what they encounter on the homepage of an

organization's website. Savvy organizations will attempt to anticipate and accommodate user needs and expectations. The anticipated user expectations may thus influence web design. Similar organizations are likely to employ similar design features so that user expectations are met. However, organizations are also compelled to distinguish themselves from their competitors in some way. In particular, exclusive private universities and more accessible public universities are likely to employ similar website features, yet categorically differ in subtle ways. A content analysis facilitates identification and quantification of the similarities and differences. That information was used to construct prototypical homepages representative of exclusive and accessible university websites. The use of prototypes allows an assessment of the influence of affordances on user evaluations of credibility perceptions that is independent of preexisting attitudes by virtue of organizational reputation.

This endeavor contributes to the literature and the understanding of organizational communication in a number of ways. First, the content analysis of a small sample of university website homepages lends insight into the degree to which similar organizations employ similar web design features. In addition, eye tracking methodology enables direct assessment of visual attention paid to affordance features by users. Further, integration of the MAIN model and the Two-factor theory allows evaluation of the relationships between affordances, users expectations, and credibility judgments. Finally, visual attention data are useful in assessing what visual elements are being attended to and are thus more likely influence credibility judgments.

The sections that follow detail this investigation. In the next chapter, the literature on web site design, affordances, the MAIN model, and the two-factor theory will be

explored and integrated. Research questions and hypotheses will be presented. In Chapter 3 the methodologies of the two studies will be explained. The first study, a content analysis of a sample of university website homepages, will assess structural features and the use of hyperlinks. Results will inform the construction of prototypes that are representative of the observed web pages of accessible public universities and more exclusive private universities. These prototypes will serve as the manipulation for the experimental study of the effects of affordances on perceptions of credibility. Results of the experimental study will be presented in Chapter 4 and discussed in Chapter 5.

## **CHAPTER II**

### **LITERATURE REVIEW**

The influence of affordances on impressions of credibility are assessed in the context of university website homepages. This first necessitates a deeper understanding of website design, affordances and heuristics, the MAIN Model (Sundar, 2008) and the Two-Factor Theory (Herzberg, 1966).

#### **Website Design**

Organizations increasingly rely on the Internet to convey their image and to communicate with potential customers. Often a great deal of effort goes into developing the content, but it is not just the information that users attend to. Contextual cues, design elements such as font, color, and organization, can play an important role in influencing user perceptions and global evaluations. In fact, those peripheral features, elements of design quality, have been shown to influence not only perceptions, but also subsequent usage (Al-Qeisi, Dennis, Alamanos, & Jayawardhena, 2014; Wang, Soonkwan, & Hao, 2010).

Relevant to usage, much of the research on website design focuses on issues of usability. Usability is a measure of the ability to efficiently serve the needs of the users.

However, usability measures can also be influenced by user perceptions of whether the interface is attractive and “looks easy to use” (Tractinsky, Katz, & Ikar, 2000). This effect can be particularly prevalent with respect to first impressions. In the context of online job recruitment, web design features explained significant variance in website evaluation (Allen, Biggane, Pitts, Otondo, & Scotter, 2013). Even though conducted in the high motivation realm of job search, in which cognitive processing was observed to be based upon objective characteristics, there was evidence that global judgments were processed heuristically. In other words, subjective design elements were interpreted using decision strategies that produce an enduring overall impression. Thus, it’s not what you say, but how you say it. To be most effective, all aspects of the message – in terms of content and form – must be considered from the perspective of the intended audience.

**University websites.** University websites provide a useful context because first impressions are extremely important to student recruitment. However, university websites must serve many functions for a diverse group of users (Hite, & Railsback, 2010; Poock & Lefond, 2001). Considering the perspective of the intended audience is more of a challenge because the needs of internal users and external users must both be accommodated. Internal users, such as current students, faculty, and staff, rely on the website for daily communication and access to information. However, the website must also appeal to external users, such as potential students, to promote itself in such a way as to cultivate a suitable pool of applicants (Poock & Lefond, 2001). For example, accessible public universities must develop a broad appeal, whereas more exclusive institutions want to appeal to all students, but in particular to high achieving students (Han, 2014). Further, in addition to meeting the needs of all of its users, the institution

must also try to distinguish itself in some way from its competition. To what extent is that balance being achieved?

There is some evidence of little variation in college website design. A study of higher education in Portugal found no significant differences between public and private institutions on website quality (Carlos & Rodrigues, 2012). The authors suggested that this was evidence that the institutions were not committed to using their websites effectively to market themselves to prospective students. Studies of U. S. universities have had varied results. Gordon and Berhow (2009) investigated the use of dialogic features on university websites. Dialogic features are relationship-building tools that facilitate user interactions with the university, such as links to contact admissions, apply, or schedule a visit. Despite sampling diverse institutions, the authors found little variation. Websites of liberal arts institutions were found to be slightly more dialogic than those of larger institutions that offer doctoral programs. The difference was not statistically significant and was attributed to the smaller size of the liberal arts institutions. However, a sampling of 129 of the best national universities in the U. S. found some differences (Kang & Norton, 2006). Schools with small or medium levels of “excellent” student recruitment and alumni giving more actively used their websites to reach out to prospective students and parents than did schools with high levels of top student recruitment and alumni giving. Thus, among top institutions, the website was used to try to overcome deficiencies. Notably, the study also observed a trend toward simplified design to facilitate the ease with which information can be accessed (Kang & Norton, 2006).

There is further evidence of increasing recognition of the importance of design elements. An assessment of changes in university website design from 2003 to 2013 found statistically significant improvements in design attributes (Astani, 2013). The author concluded that the competitive environment of college recruitment has necessitated that web design meets the expectations of the potential students. One caveat, however: How does a university both meet user expectations and distinguish itself from its competitors? A study of public and private college websites asked high school students to rank the content in terms of importance (Ford, 2011). With respect to student assessments of “important” or “very important,” organization/architecture (a navigation bar) was rated as such by nearly as many (95%) as was content (97%). However, less than half of the students rated “distinctiveness” as important or very important. This is an indication that users may not value efforts of a university use website design to distinguish itself from competing organizations. Although Carlos and Rodrigues (2012) had suggested that institutions were not committed to using their websites effectively to market themselves to prospective students, it is not clear to what extent deviating from user expectations will be perceived positively.

Clearly, design elements of websites can influence users’ perceptions, potentially their behavior. In particular, affordances both enable actions and have the potential to influence perceptions.

### **Affordances**

An affordance is a characteristic of the environment that, when perceived, *affords* or provides an opportunity for some action (Gibson, 1986). The concept describes the relationship between a physical object or some aspect of the environment and an



organism in which a characteristic of the object or environment affords an organism an opportunity to perform some action. Perceptual psychologist Gibson (1977) developed the term affordance as a new perspective on visual stimuli. Rather than the traditional view of visual stimuli, he preferred to conceptualize visual elements of the environment as information. Information does not stimulate a passive receiver, but instead allows the user an active role of noticing and utilizing the information. Affordances are thus properties of the environment that enable action on the part of those who perceive them. The affordance simply allows or affords action. To be acted upon, the perceiver must be able to recognize the presence of an affordance, its potential to fulfill his or her needs, and be motivated to act upon it.

Gibson's concept has also been applied within the realm of computer-mediated technology. Conceptualized as technology affordances, the concept of affordances has been extended to web design (Gaver, 1991; Norman, 1988).

**Technology Affordances.** Technology affordances are ways in which features of technological media present the potential for action and facilitate those actions (Putnam, 2008). Examples of this application are seen in menu designs that organize information by nesting, grouping, or sequentially listing are examples. As mentioned above, affordances must be properly perceived for the user to recognize the potential for action. Therefore, the concept of affordances is a pragmatic concept that should guide design decisions in developing cues that are both functional and easily perceived by the intended user.

Technology affordances have been widely investigated and categorized (Bright, 2014; Day & Lloyd, 2007; Conole & Dyke, 2004; Sundar & Bellur, 2010). Bauer and

Scharl (2000) developed a typology focusing on functionality and usability. Functionality incorporates searching and navigating whereas usability includes aspects of organization and labeling. Other research stipulated that usability included ease of use, navigability, and consistency (Sindhuja & Dastidar, 2009). Underlying these typologies are two attributes that are fundamental to the goals of this investigation, interactivity and navigability. Because the focus of this investigation was on features that facilitate searches for and thus access to information located elsewhere on the website, the affordances interactivity and navigability are of primary concern and the study was limited to these two affordances.

***Interactivity.*** Media interactivity is generally characterized by the ease with which a medium allows the user to access desired information. The conceptualization of interactivity varies greatly (Bucy & Chen-Chao, 2007; Macias, 2003; Stromer-Galley, 2004; Sundar, 2008). Macias (2003) defined interactivity as

the state or process of communicating, exchanging, obtaining, and/or modifying content (e.g., ideas, entertainment, product information) and/or its form with or through a medium (e.g., computer, modem, etc.) which responds to both the communicator's and the audience's communication needs by including hypertext links, reciprocal communication, etc... (p. 32-33).

This is of interest, as it includes the term *hypertext links*. Hypertext is a web feature that provides access to other sections of the site by using nodes and hyperlinks (Amadiou et al., 2015). A node is a means of connecting with other content; the hyperlink signifies the presence of that node (Sandberg, 2013). This capability for interacting with web content can be achieved by the use of a word, phrase, or icon that may be enclosed in a shape or in a font, color, or size that makes it noticeable. Thus, the appearance of the hyperlink is

an affordance that cues the user to act and allows the user to interact with content located elsewhere on the site.

More briefly, interactivity was conceptualized as “technological attributes of mediated environments that enable reciprocal communication or information exchange, which afford interaction between communication technology and users, or between users through technology” (Bucy & Chen-Chao, 2007, p. 647). This potential for reciprocity provides users with the ability to customize their online experience. Sundar (2008) concisely noted that, while there is no universally accepted definition for interactivity, the term generally implies both activity and interaction. Indeed, one of the greatest affordances of the Internet is the capacity for interaction that enables user participation (Day & Lloyd, 2007). Regardless of how it is specifically defined, interactivity can be beneficial to both the website user and sponsor. Some research suggests that interactivity improves comprehension (Macias, 2003). Further, higher interactivity has been shown to generate greater engagement with the content, more positive attitudes toward both the content and the website, and a greater intention to follow up (Sundar et al., 2010). In a political context, the level of interactivity of a candidate’s website influenced perceptions of the candidate and agreement with the candidate’s policy positions (Sundar, Kalyanaraman, & Brown, 2003). Interactivity is thus a valuable means of communicating both information and impressions (Macias, 2003; Song, & Zinkhan, 2008).

For the purpose of this study, as suggested by Sundar (2008), interactivity will be defined as the technological cues that have the potential to enable active user interaction with a website. In particular, hyperlinks will represent interactivity affordances. Even if that potential is not realized, upon first glance of the static web page, it is the potential for

interaction that may be perceived and is of interest here. However, in the process of facilitating user interaction with a website, hyperlinks also afford the ability to navigate throughout the site. Thus, the affordance navigability is also relevant to this study.

***Navigability.*** Navigability refers to interface features that allow the user to move from one site location to another. Affordances that enable website navigation must be easily understood and generally convey a consistent and organized use of features and design elements (Sundar, 2008). Similarly, Gounaris and Dimitriadis (2003) considered navigation as a type of interaction facilitation benefit, along with ease of use and appropriate design. Further, in a study evaluating the quality of web home pages, navigability was assessed in terms of the consistency of features and the presence of navigation bars which allowing quick access to other parts of the site (Miranda, Sanguino, & Bañegil, 2009). Navigation links, embodied as the previously discussed hyperlinks, “articulate the structure of a website” (Haas & Grams, 2000, p. 184), are a rich source of communication. Hyperlinks thus embody characteristics of both interactivity and navigability affordances.

## **Hyperlinks**

Hyperlinks provide users with opportunities to interact with and navigate throughout web content. Whereas interactivity is defined as the technological cues that have the potential to enable active user interaction with a website, navigability enables the user to purposefully locate and access parts of the website not currently on the screen (Sundar, 2008). According to the theory underlying the MAIN model, interactivity provides users with the ability to serve as information source rather than merely receiver. The customization cues embedded in interactivity affordances may trigger heuristics

relative to choice and control, which are relevant to the potential afforded by hyperlinks. Hyperlinks also are relevant to the heuristics browsing and elaboration, which are cued by navigability affordances. Although they are separate affordances, interactivity and navigability have the potential to cue the same heuristics (Sundar, 2008). This study thus integrates interactivity and navigability by examining hyperlinks, affordances that have the potential to both facilitate interaction with and exploration of content throughout the website. Specifically, hyperlinks are conceptualized as words or brief phrases that are prominently positioned on the homepage navigation bar and that facilitate user interaction and link to content that is located elsewhere on the website. Hyperlinks can vary tremendously in terms of design elements. Choice of wording, font, size, color, and placement on the screen and relative to other elements may prompt peripheral processing, as described in the section on web design. An overall impression may be greatly influenced by design elements such as hyperlinks. The decision strategies used to produce an enduring overall impression are heuristics.

### **Heuristics**

Affordances such as hyperlinks embody both technological and psychological cues (Sundar & Bellur, 2010). Users develop associations between technology attributes and the actions that they enable. It is this associative process that evokes judgments via heuristics. Heuristics are strategies used to facilitate problem solving. They employ “rules of thumb” or cognitive shortcuts, and may minimize the amount of cognitive effort needed to make decisions (Chaiken, 1980). By simplifying the mental processes, judgments can be made more quickly and efficiently (Fiske & Taylor, 2008). This process allows one to quickly employ a solution that is “good enough,” which is a

reasonable thing to do. However, reason may at times not be well served. Although heuristic strategies can facilitate processing that is both efficient and accurate (Bellur & Sundar, 2014), they are influenced by psychological processes that may occur outside of conscious awareness, and can thus lead to judgments that “feel right” but that may have little or no logical, rational basis.

Heuristic processes are likely to dominate initial evaluations and determine first impressions (Briggs, Burford, De Angeli, & Lynch, 2002). Well-established cognitive processing models support these observations. The elaboration likelihood model (ELM) distinguishes between central and peripheral processing. Central processing is effortful, and is characterized by attention to content, upon which evaluations are based.

Alternately, peripheral processing relies on formal features such as attractiveness – perhaps even font color (Petty & Cacioppo, 1986) – to make assessments that may in fact be unrelated to those features. Similarly, the heuristic-systematic model (HSM) distinguishes between systematic and heuristic processing. Systematic processing involves the objective analysis of information, whereas heuristic processing relies on heuristics, mental shortcuts (Chaiken, 1980). First impressions tend to be informed by mental shortcuts and those initial assessments tend to influence other evaluations (Briggs, Burford, De Angeli, & Lynch, 2002; Yang 2014).

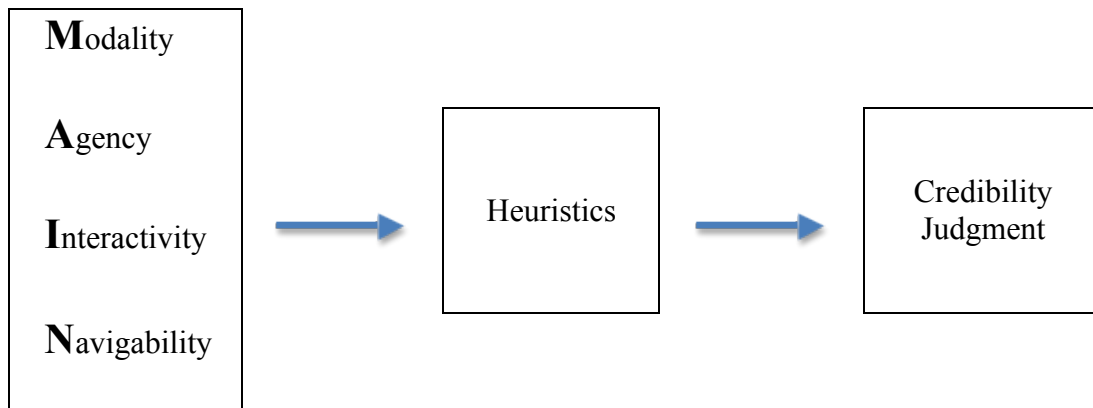
Technological affordances may facilitate interaction and navigation and also provide cues that prompt user judgments. For example, Green and Pearson (2011) found navigability to be a significant predictor of perceived ease of use. An exploration of interactivity on web recruitment pages (Guillory & Sundar, 2008) found evidence that interactivity positively influenced perceptions of the organization, prompting the authors

to recommend its use as a public relations tool that can attract and engage website users. An organization's website can communicate not just information, but can help to form its public image (Hsieh, 2012). According to the heuristic-systematic model, the external cues attract user attention and activate internal cues that that guide internal, unconscious, processing (Bellur & Sundar, 2014). In general, computer mediated communication may activate a psychosocial relationship (Riva & Galimberti, 1998). Specifically, interactivity and navigation affordances may cue heuristics that lead to judgments about the website's organization (Sundar, 2008), such as its credibility. The MAIN model examines this relationship and will be discussed next.

### **The MAIN Model**

The MAIN model focuses on the use of heuristics to cue unconscious processes that facilitate credibility judgments about online sources, especially among youth users (Sundar, 2008). Sundar incorporates four types of affordances, modality, agency, interactivity, and navigability, into the MAIN model. According to the model, it is the cues embedded in the affordances that cue heuristics, which in turn lead to source credibility judgments (See Figure 1).

Figure 1. The MAIN Model



Notes: Originally published in Sundar (2008)

Credibility is regarded as an assessment of the source of information and is generally comprised of trustworthiness and expertise (Hilligoss & Rieh, 2008). Trustworthiness includes judgments regarding reliability and fairness, while expertise involves perceptions of competency and knowledge. Some have proposed that the first step in the judgment of online credibility relies on surface characteristics such as appearance and how the information is presented, rather than on more objective nominal cues (Wathen & Burkell, 2002).

The design elements of interactivity and navigability can influence first impressions (Sundar, 2008). Hyperlinks enable interactivity and navigability thus can serve as a means of allowing users to become more familiar with the website content. Studies have shown that clear layout and display were connected to positive first impressions of trustworthiness whereas a complex layout with too much text was more



likely to be associated with negative impressions (Briggs, Burford, De Angeli, & Lynch, 2002). This information is consistent with previous observations of the influence of homepage complexity on communication effectiveness (Geissler, Zinkhan, & Watson, 2006). One of the factors influencing perceptions of homepage complexity was number of links (Geissler, Zinkhan, & Watson, 2006). Specifically, moderate complexity is perceived more favorably and is judged to better facilitate effective communication. Of particular interest is the finding that as many as 13 links were not perceived to exceed moderate complexity (Geissler, Zinkhan, & Watson, 2006). Similarly, interface cues that reduce the complexity of navigation were found to enhance user feelings of competence and positively influence perceptions of online content (Sundar, 2015). These findings suggest that the number of interface cues, such as hyperlinks, may influence perceptions of credibility. Further, certain types of hyperlinks may be differentially perceived in ways that impact credibility judgments. Design elements that are familiar may suggest trustworthiness and thus be associated with credibility.

Of further interest are two criteria that predict the use of a heuristic judgment rule: whether a heuristic is accessible and whether it is relevant influence the likelihood that the heuristic will be employed. A heuristic is accessible to the extent that it is used frequently; a heuristic is relevant to the extent that it applies to the situation. Thus, previous experience with similar circumstances increases the likelihood that heuristic judgments will be used.

Every affordance has the potential to cue heuristic processing and elicit positive or negative perceptions. Heuristic processing can enhance the persuasive influence of non-content peripheral cues (Chaiken, 1980), even when unintended by the source. The

structural features of digital media thus have surface level characteristics that are capable of conveying impressions of credibility. Those same features can also influence user satisfaction, which may in turn affect perceptions of credibility. Herberg's motivation-hygiene theory, also known as the two-factor theory, considers the impact of satisfaction and dissatisfaction.

Guided by the MAIN model, this study evaluated several elements that influence credibility judgments. Hyperlinks, which represent technology affordances of interactivity and navigability, provide cues that may prompt credibility judgments. Experimental manipulation of the accessible and exclusive university website homepage prototypes provides a means of assessing the variance in credibility that may be attributable to differences in affordances. According to the MAIN model, features of technology affordances cue heuristic processing, which prompts credibility judgments. Prior research has found number of links to be associated with perceptions of complexity (Geissler, Zinkhan, & Watson, 2006), which has been found to positively influence perceptions (Sundar, 2015). This inquiry thus examined whether the number of interface cues, specifically hyperlinks, influence perceptions of credibility:

**RQ1:** Will the number of hyperlinks be associated with perceptions of credibility?

As stated previously, hyperlinks represent the technology affordances of interactivity and navigability and present cues that facilitate heuristic processing. Prior experience may influence the extent to which relevant heuristic judgment rules are accessible. The accessibility and relevance of heuristic cues increase the likelihood that a user will apply a heuristic judgment rule. Heuristic processing relies on peripheral cues

rather than message or content. Interested in first impressions, this study presented a static image of the prototypes for only 10 seconds. The brief duration and restriction to only the homepage ensures minimal exposure to non-peripheral content. Credibility judgments thus rely on heuristic processing, which is facilitated by prior relevant experience. Higher levels of Internet experience, experience with university websites in particular, is hypothesized to be associated with non-neutral credibility judgments.

**H1:** Users with more Internet experience are more likely to apply heuristics and thus make non-neutral credibility judgments than users with less Internet experience.

**H2:** Users with more experience with university websites are more likely to apply heuristics and thus make non-neutral credibility judgments than users with less experience with university websites.

### **The Two-Factor Theory**

As described above, every affordance has the potential to cue heuristic processing and elicit positive or negative perceptions. The valence of the perceptions can be influenced by how the affordances – how the features – compare to user expectations. Herzberg's (1966) motivation-hygiene theory has been applied in the field of organizational communication, specifically with respect to job satisfaction. Also known as the two-factor theory of job satisfaction, rather than treating satisfaction and dissatisfaction as opposite ends of a single continuum, Herzberg posited them as two separate dimensions. Motivators and hygiene factors are instrumental in influencing satisfaction and dissatisfaction, respectively. Motivators are elements that make things

better than expected. The presence of motivators increases perceptions of satisfaction, whereas their absence reduces satisfaction. Conversely, the absence of hygiene factors can lead to dissatisfaction. Hygiene factors represent the minimum expectations required for circumstances to not be regarded as unsatisfactory. In other words, hygiene factors are expected to be present, to minimize dissatisfaction. If hygiene factors are not present, dissatisfaction commensurately increases. Dissatisfaction and satisfaction are thus characterized as independent processes. In terms of overall satisfaction, the presence of hygiene factors may be regarded as necessary, but perhaps not sufficient. While the presence of motivators may increase satisfaction, their influence may be diminished by the absence of hygiene factors. These factors are also relevant to web design.

**The two-factor theory and web design.** The two-factor theory has been applied to website design and evaluation (Zhang, Small, Von Dran, & Barcellos, 1999; Zhang, Small, Von Dran, & Barcellos, 2000; Zhang & Von Dran, 2000). Systematic investigation indicates that website features contribute to user satisfaction. More specifically, a number of applications are related to first impressions and credibility judgments (Zhang, Small, Von Dran, & Barcellos, 2000, pp 5-6). The primary hygiene factors involve elements of overall appearance, which greatly influence first impressions. The design should be uncluttered and meet minimum expectations in terms of usability and aesthetics. Among the most relevant motivator factors are the presence of expected but useful links relevant to the context, and the extent to which the links use familiar terminology and are logically organized. Indeed, research has indicated that university students rely on hyperlinks for web browsing for information and have developed certain expectations (Sandvig & Bajwa, 2004).

In terms of meeting user expectations, there is a positive linear relationship between each of the factors, hygiene and motivators, and favorable user impressions, such as credibility. Specifically, while it may not be sufficient, the presence of hygiene factors is necessary for impressions to be favorable, because their absence would result in dissatisfaction. Motivator factors, on the other hand, can enhance favorable impressions, but, if present, may not be sufficient to compensate for the absence of hygiene factors.

The exploratory work of Zang, Small, von Dran, and Barcellos (1999) adapted Herzberg's (1966) workplace hygiene and motivation factors to the web environment. The web hygiene factors correspond to various aspects of working conditions and relate to the perceived usability, functionality, and attractiveness of the website based upon user expectations. The web motivator factors, if present, add a welcome but perhaps unexpected element that contributes to a positive user perception (Zhang & von Dran, 2000). User expectations delineate motivator and hygiene factors, thus there is not always a clear line differentiating them.

There is now so much information available online, it can be both difficult and overwhelming to find the specific information desired (Conole & Dyke, 2004). Website navigational aids, visual cues, can clearly organize and present information to facilitate searches (Sundar, Knobloch-Westerwick, & Hastall, 2007). However, interactive features also have the potential to overwhelm the user (Bucy, Lang, Potter, & Grabe, 1999). Further, the goals of the users can impact their expectations and demands of interactivity (Day & Lloyd, 2007). A general assumption is that a webpage will be clear and easy to understand (Haas & Grams, 2000). Thus, the goal of web design, to maximize both usefulness and perceptions of usefulness, is referred to as usability (Sindhuja & Dastidar,

2009). This involves making the design as simple as possible so that user goals can be achieved with a minimum amount of effort. So, it's a balancing act. To be attractive and minimize dissatisfaction, a web page must offer enough opportunities for interaction and navigation, but not too much. Similarly, to be satisfying a web page must be stimulating enough to not be perceived as boring, but not too stimulating, lest it be overwhelming. Drawing upon two-factor theory, user satisfaction and dissatisfaction can also influence first impressions of the webpage. If hygiene needs, basic expectations, are not met, the resulting dissatisfaction may lead to correspondingly lower assessments of credibility. Alternately, the presence of hygiene items that meet with expectations will not reduce assessments of credibility. Other features, motivators, may also influence credibility judgments. If an unexpected feature pleasantly surprises, it will increase user satisfaction and may induce a higher credibility assessment.

**H3:** There will be a positive relationship between hygiene factors and perceptions of credibility.

**H4:** There will be a positive relationship between motivator factors and perceptions of credibility.

### **Eye tracking**

The above observations rely on self-report measures. Eye tracking methodology allows a more objective assessment of what elements of the webpage users are attending to, enabling inferences about which features have the greatest influence on cognitive processes and subsequent judgments. Eye tracking data is an objective tool that can enhance observations of HCI. Eyes voluntarily and involuntarily fixate on objects, thus

eye tracking data can provide clues about behaviors of which users may be unaware (Fukuda & Bubb, 2003; Goldberg & Kotval, 1999). According to the eye-mind hypothesis, eye gaze corresponds to working memory (Cooke, 2005; Poole, 2006). Such data can be useful for evaluation and improvement of web design. Some important terms regarding eye tracking are fixations, saccades, and scanpaths. Fixations are intervals spent visually attending to a location, with a minimum duration of 100 to 150 ms (Goldberg & Kotval, 1999). Saccades are the much more brief intervals that are spent visually traveling from one fixation to another. Scanpaths are a roadmap of the saccade-fixate-saccade sequences (Goldberg & Kotval, 1999). Observations of scanpaths and fixation sequences reveal the order in which elements of the website are attended to and how much visual attention is devoted to them.

While fixation sequence indicates where users look first, fixation duration indicates where they look the most (Russell, 2005). Longer fixation durations imply the user is spending more time interpreting the interface (Goldberg & Kotval, 1999). This can occur because the object is of high interest or relevance, or because it is unexpected and/or ambiguous and difficult to understand. Thus, it is useful to employ some sort of survey measures in conjunction with eye tracking to assist in inferring their interpretation. Multiple visits to a previously viewed area may indicate that an observed feature was in some way unexpected (Goldberg & Kotval, 1999).

Eye tracking measures can serve as a means of corroborating survey measures with respect to visual features of the web environment. In particular, longer gaze duration on hyperlinks may indicate higher levels of interest and thus be associated with higher credibility ratings. Hyperlinks are visual as well as verbal cues. Semantically, they are

symbolic entities that convey meaning, the potential for action, and psychological elements that can serve as cues for heuristic processing. Hyperlinks may also vary in terms of design, such as font style, size, and color. Therefore, it is possible that certain types of hyperlinks may be differentially perceived in ways that impact credibility judgments.

**RQ2:** Will certain types of hyperlinks be differentially associated with perceptions of credibility?

Other formal features of the homepages, perhaps associated with hygiene and motivator elements, may also influence credibility. Gaze duration can be a means of assessing the contributions of design elements to perceptions of credibility.

**RQ3:** Will other design features be associated with perceptions of credibility?

Overall visual attention to hyperlinks, may also be a means of integrating the MAIN model with the two-factor theory. Longer gaze duration on a particular hyperlink may indicate that it is unexpected or in some way ambiguous or difficult to interpret. Unexpected may be a positive, a motivator factor, if perceived as a pleasant surprise. Alternately, longer gaze duration may indicate that the hyperlink is perceived negatively, low in hygiene. Gaze duration can thus lend insight into the influence of user expectations on the process underlying the MAIN model.

**RQ4:** Do participants with longer gaze duration on hyperlinks report higher credibility ratings?



As discussed above, longer gaze duration on a particular hyperlink may indicate that it is perceived positively or negatively. According to the eye-mind hypothesis, visual attention is likely to be associated with cognitive processing and thus be an indication of what is being thought about. Gaze duration, the length of time spent fixated on a particular place, should thus give insight into what is influencing cognition. It follows that thought listing recall items, details about the homepage that stand out in the user's memory, should be associated with longer gaze duration. Details recalled immediately after viewing the webpage should corroborate and may provide insight to aid in the interpretation of the eye tracking data.

**RQ5:** Will longer gaze duration be associated with higher levels of recall?

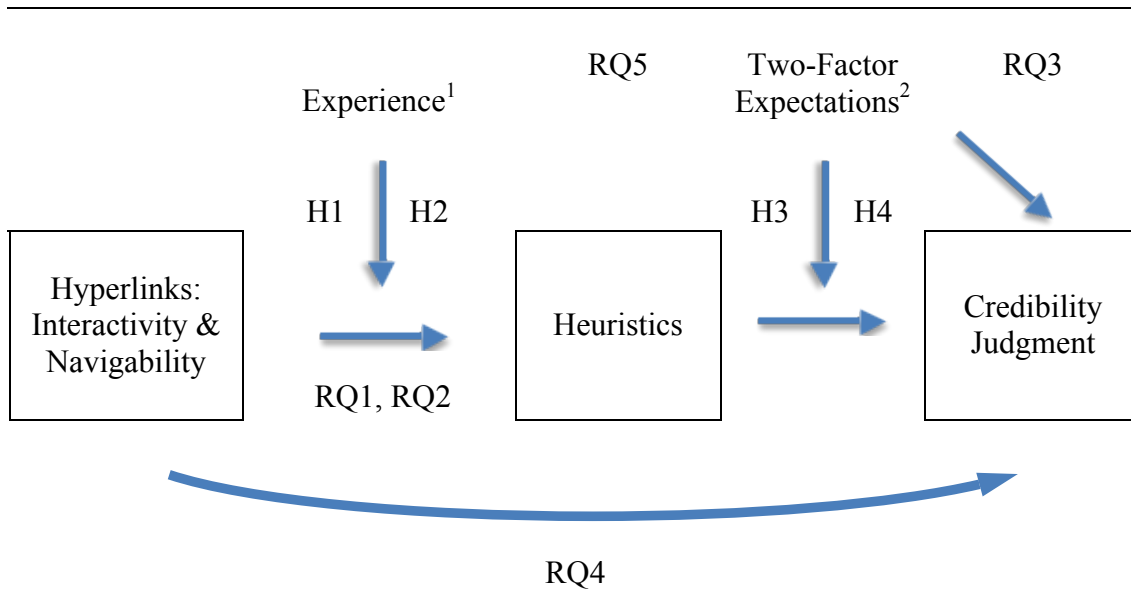
## **Synthesis**

This study investigates the relationship between hyperlinks, which represent the potential to afford interactivity and navigability, and perceptions of credibility. By integrating the MAIN model and the two-factor theory (Figure 2), this study evaluates several elements that influence credibility judgments. These elements include hyperlinks, prior experience (which impacts the extent to which relevant heuristic judgment rules are accessible), and expectations about hygiene and motivator factors.

Because this study is interested in first impressions, university website homepages were used. Universities can annually rely on a new pool of users who are actively seeking information about their institution. The technology affordances presented on website home pages perform the pragmatic functions of allowing the users to interact with and navigate throughout the website in search of information. However, those affordances

also have the ability to influence perceptions of the university. Attributions of credibility and other characteristics, such as helpfulness, can be elicited based solely on those visual

Figure 2. Research Questions and Hypotheses Integrating the MAIN Model and the Two-Factor Theory



Notes: <sup>1</sup> Whether a heuristic is applied is influenced by two criteria: the extents to which a judgment rule is accessible and relevant, characteristics that are influenced by experience; <sup>2</sup> The two factors are **hygiene** and **motivator**.

cues, independent of actual website content. In addition, there are numerous other organizations competing for, thus trying to favorably impress, the same potential students. This means that although it is advantageous for universities to try to distinguish themselves from the others, this should be done with caution. Failure to sufficiently comply with users' expectations to facilitate comparison of information may have negative consequences in terms of perceptions of the organization. This tension will likely have a leveling effect that results in many of the universities presenting similar

information, particularly on the homepage. Thus, the sample used for content analysis is comprised of universities. Further, even though targeting similar users, two different types of institutions were selected to maximize potential differences in presentation styles. Specifically, the ten most accessible and ten most exclusive Ohio universities were chosen.

**Stimulus selection research questions.** The first step in this study was the development of prototypes that are representative of the website homepages of accessible and exclusive universities. The use of prototypes rather than existing websites enables control for user preconceptions or biases if familiar with the organizations whose websites are presented. Since the MAIN model examines the relationship between affordances and credibility judgments, hyperlinks will be an important element. Hyperlinks, as visual cues, possess the potential to enable interactivity or navigability. Thus, a sample of university website homepages was content analyzed to determine the number of and types of hyperlinks associated with accessible and exclusive university web pages. Also, to empirically inform the overall design of the prototypes, various other features were assessed, guided by the analysis of a preliminary sample that guided development of a content analysis codebook. The structural features included location and dimensions of the navigation bar, size and location of the primary visual image, and various other physical features common to webpage design. To inform the systematic development of prototypical examples of accessible and exclusive university website homepages, answers to the following content analysis research questions (CARQ) were sought:

**CARQ1:** Which hyperlinks are predominantly featured on the majority of the university website homepages?

**CARQ2:** Which hyperlinks are presented to similar extents by both accessible and exclusive universities?

**CARQ3:** Which hyperlinks are differentially featured by accessible and exclusive universities?

**CARQ4:** Which basic structural elements of web design are common to both accessible and exclusive university website homepages?

**CARQ5:** Which basic structural elements differentiate accessible and exclusive university website homepages?

Based on the content analysis findings, hyperlinks were manipulated in ways that corresponded to observed frequencies of their occurrence on accessible versus exclusive university website homepages. The most prevalent hyperlinks and design features were incorporated in the basic design of a university homepage prototype. Design features and hyperlinks observed to vary by type of university were then used to differentiate the prototypes representative of the two types of university homepages.

The following section will describe the research methodologies employed to investigate the questions and hypotheses described above.

## **CHAPTER III**

### **METHOD**

This study is comprised of two parts. The first, a preliminary investigation for stimulus selection, systematically analyzed the features of a sample of university website homepages. Results of that content analysis were used to develop prototypical homepages representative of those found on accessible and exclusive university websites. Those prototypes were then used as the stimulus in a post-test only experiment.

#### **Preliminary Investigation for Stimulus Selection Overview**

As previously discussed, university website homepages were used due to their relevance to first impressions. The technology affordances on website homepages allow users to interact with and navigate throughout the website in search of information. However, those affordances also have the ability to influence perceptions of the university, in particular, perceptions of credibility.

The first step was to content analyze affordances and structural elements of the university website homepages sampled. Those affordance and structural features were then used to construct prototypes of website homepages that are free from prior preconceptions of credibility. Thus, those features, based on the degrees to which they are

differentially associated with accessible versus exclusive universities, can be experimentally manipulated and investigated using eye tracking and survey methodology.

### **Preliminary Investigation Sample**

Among Ohio universities, three selection criteria were used to determine accessibility: affordable (low tuition and fees, less than \$12,000; range \$8,317 to \$11,548), large enrollment (over 10,000; range 11,348 to 44,741), and moderate to high acceptance rates (over 50%; range 53.0% to 96.8%). Similarly, exclusivity was determined by: expensive (high tuition and fees, over \$30,000; range \$31,508 to \$50,586), small enrollment (less than 5,000; range 1,235 to 4,911), and low to moderate acceptance rates (under 75%; range 25.1% to 74.3%; see Tables A.1.1 & A.1.2 in Appendix A). The demographics are summarized in Table 1.

Table 1. Demographic Variables of Accessible and Exclusive Universities, 2015-2016

		<i>Mean</i>	<i>SD</i>	<i>Range</i>
Cost	Accessible	\$10,030	\$991	\$8,317 to 11,548
	Exclusive	\$41,070	\$7,546	\$31,508 to 50,586
	Total	\$25,550	\$16,763	\$8,317 to 50,586
Enrollment	Accessible	20,218	9,969	11,348 to 44,741
	Exclusive	2,819	1,286	1,235 to 4,911
	Total	11,519	11,293	1,235 to 44,741
Acceptance	Accessible	77.8%	16.4%	53 to 97%
	Exclusive	56.0%	18.4%	25 to 74%
	Total	66.9%	20.3%	25 to 97%
Residents	Accessible	84.5%	7.8%	70 to 95%
	Exclusive	42.4%	27.7%	5 to 82%
	Total	63.5%	29.3%	5 to 95%

## **Preliminary Investigation Procedures**

Content analysis was used to assess the sampled organizations' website homepages to determine the degree to which they incorporate the same affordance features. On a laptop with a 1440 x 900 pixel (11.25 x 7.125 inch) screen, each university's home page was accessed (see Tables A.2.1 & A.2.2 in Appendix A). A static image of only what appeared on the screen without scrolling was evaluated. The images were captured with a Grab version 1.7 for Mac screenshot and saved in a digital file.

Previous studies have applied content analysis to assess website interactivity, information, and design elements (Lee, Lee, Kim, & Stout, 2004). Content analysis extends the application of scientific method to textual material (Kim & Kuljis, 2010), potentially allowing data to be assessed both qualitatively and quantitatively. The technique can be used to systematically classify website features (Hsieh, 2012). In general, the content analysis process often involves training multiple coders and assessing their reliability, that is, the degree to which they are all consistently measuring the same things. Due to the small sample size of this exploratory research, only one coder was used.

## **Preliminary investigation Measures**

According to Krippendorff (1980), content analysis is a systematic (and thus, replicable) technique for compressing text into discrete content categories based on clearly defined coding rules. The rules for this research were developed based on theory and on a coding sample, a subset of six public universities. Three accessible and three exclusive universities that were within the range of at least one, but no more than two of



the three criteria were selected (See Tables A.1.1 & A.1.2 in Appendix A). The elements of interest are described below and indicated in Figure 3.

**Navigation bar (NB).** This horizontal band typically comprises much of the top half of the screen. The navigation bar features the primary organizational identifier and a concentration of a specific type of affordance, hyperlinks.

**Hyperlinks.** These are affordances that are comprised of a single word or a brief phrase and are used to deploy menus and/or link to a different page, thus afford user interactivity and navigation. Only those hyperlinks that appear on the navigation bar will be assessed. Many of the prominently positioned hyperlinks will be of interest to first time visitors, presumably prospective students and/or their families, seeking information about the university, its programs, and other areas of interest. Categories include About, Academics, Admissions, Student Life, and Athletics.

**Search feature.** A search feature can facilitate a nonlinear strategy to locate information. Visible elements of a search feature may include the word *Search*, a text box, a search icon (generally presented as a magnifying glass), and other word prompts. The search feature may vary in its prominence, appearing centrally on the navigation bar, or it may be smaller or otherwise less visible and/or peripherally located.

**Organizational identifiers (OID).** The name of the organization, as the primary identifier, is typically featured prominently on the navigation bar, generally to the left of center. Other identifiers, such as a logo, date established, location, or slogan, may accompany the name of the organization. Additionally, at least one hyperlink may feature some text that is associated with the identity of the organization (e.g., name, nickname, or mascot name).

Figure 3. Website Homepage Elements of Interest



**Primary image.** The largest photo or visual image featured. It typically appears below the navigation bar and may serve as a background for text and other types of links.

**Text boxes.** These are distinct groupings of five or more words. However, this does not include text that appears directly on photos.

**Font sizes.** The fonts utilized for hyperlinks and organizational identifiers vary greatly in size and style. Due to variations in size by font style, measures must be standardized relative to one particular font. The height of the text may thus be recorded by the corresponding font size of the standardized font style.

As described, six organizations were used to develop a coding scheme. All hyperlinks featured on the navigation bars were noted as hyperlink categories. Categories that were featured on only one webpage were subsequently consolidated with another category that presented similar information. Seventeen hyperlink categories resulted (see Appendix B, Content Analysis Code Book).

### **Preliminary Investigation Analyses**

To facilitate the development of prototypical homepages, structural features were also assessed. Noted were the dimensions of the navigation bars and primary image, aspects of organizational identifiers and search features, relative font sizes of hyperlinks and organizational identifiers, and the number of text boxes (see Appendix B, Content Analysis Code Book).

### **Experimental Design and Stimulus Overview**

As described above in the Preliminary Investigation for Stimulus Selection, prototypical website homepages were developed. Participants viewed a prototype of a

website homepage that is representative of either accessible or exclusive university homepages for ten seconds. A post-only quasi-experiment was conducted. This study incorporated a between group design. Individuals in the two experimental conditions (accessible versus exclusive university webpage prototype) were compared on a variety of continuous outcome measures. Correlations among measures were examined. Where indicated, group mean differences were assessed using independent sample *t*-tests.

### **Eye Tracking Hardware and Software**

Eye tracking hardware (Tobii X60) and iMotion software 5.7 version was used to assess visual attention in terms of gaze and fixation characteristics.

### **Experimental Participants**

Participants were recruited from undergraduate communication courses at Cleveland State University in the spring of 2016. Of the 76 participants, 63.2% were male ( $N = 48$ ) and 36.8% female ( $N = 28$ ). Ages ranged from 18 to 50, with a mean of 23.5 years ( $SD = 5.49$ ). Racial composition of the sample was primarily White, not Hispanic or Latino (39.5%,  $N = 30$ ), Middle Eastern (30.3%,  $N = 23$ ), and Black or African American (17.1%,  $N = 13$ ). The balance was Asian or Asian American (6.6%,  $N = 5$ ), Hispanic or Latino (2.6%,  $N = 2$ ), and other (3.9%,  $N = 3$ ). Additionally, 26.3% of the participants were freshmen ( $N = 20$ ), 23.7% sophomores ( $N = 18$ ), 28.9% juniors ( $N = 22$ ), and 18.4% were seniors ( $N = 14$ ). Two participants (2.6%) reported their current standing as “other.” On average, the participants reported being a student at CSU for 3.63 semesters ( $SD = 2.92$ ).

## **Experimental Procedures**

Upon entering the lab, the participants were greeted by the researcher. Their name and course number were collected and kept separate to allow participants to receive extra credit simply for showing up. They were then presented with the Informed Consent Form (see Appendix E), which briefly describes the experiment as a “way to figure out what people think and how they feel about university websites.”

After giving consent, participants were read the following script:

There are two parts to this study. In the first part, you will be seated in front of a computer screen that has a camera, an eye tracking camera, that will watch your eyes. After the camera is adjusted to your eyes, you will look at an image of a university website homepage. There are no names, nicknames, abbreviations, or logos associated with a particular university. Instead, the word “University,” the abbreviation “Univ,” and the letter “U” have been substituted. You are asked to familiarize yourself with the image presented. You will not interact with the website, but will view a portion of the homepage for ten or twenty seconds.

Afterwards, you will move to a laptop computer to complete a survey. You will be asked questions about yourself and the web page that you viewed.

Participants were then seated at the eye tracking station. They were instructed that, for the eye tracking to work accurately, they would need to remain in the same position for no more than a minute. The researcher then guided each participant through the eye calibration process. Once the calibration was achieved, one of the website homepage prototypes was shown on the computer screen for ten seconds. Upon completion of the first task, the participants used a laptop computer to answer questionnaire items via MediaLab (see Appendix F). The entire process generally took no more than 20 minutes for each participant.

### **Experimental Measures**

**Manipulated independent variable.** The information gleaned from the content analysis of structural features and hyperlinks informed the development of prototypical representations of accessible and exclusive university website homepages. Presentation of the features found to be associated with accessible versus exclusive university website homepages were thus experimentally manipulated. Further, those features were presented independent of actual organizational identifiers that could predispose differing levels of credibility or other attitudes toward the webpage's sponsoring organization.

**Manipulation check.** Responses to four measures were used to evaluate the effectiveness of the manipulation of the independent variable. Responses to the statements "The homepage is from a private university," "The homepage is from a public university," "The homepage does not seem representative of a private university," and "The homepage does not seem representative of a public university" were reported on a seven-point Likert-type scale (1 = strongly disagree to 7 = strongly agree). Reliability of the scale was indicated by Cronbach alpha = .804.

**Measured independent variables.** Other variables may influence the relationship between the affordances and perceptions of credibility. Beliefs about public and private universities may systematically bias responses. Internet experience and familiarity with university websites impacts the accessibility and relevance of heuristics cues. Two-factor items, hygiene and motivator factors, may also influence credibility judgments, thus must be accounted for.

*Do differences matter?* Even if the manipulation check confirms that differences are perceived, those differences may not influence credibility judgments if they are dismissed or considered unimportant. Participants were presented with first and third person statements such as “I think that private universities offer a better education than public universities,” the negatively coded “I think that private universities do not offer a better education than public universities,” “Other people think that private universities offer a better education than public universities,” and the negatively coded “Other people think that private universities do not offer a better education than public universities.” Participants were asked to indicate which best describes their responses on a seven-point Likert-type scale (1 = strongly disagree to 7 = strongly agree), with higher responses reflecting a stronger belief that private universities offer a better education.

*Previous Internet experience.* Prior experience with Internet use and university websites in particular may influence the accessibility and relevance of heuristic cues. Higher numerical responses indicate more experience.

*Internet experience.* Five measures from Flanagin and Metzger (2000) were used to assess Internet experience. Responses were indicated on seven-point Likert-type scales. Sample items include “How often do you use the Internet?” with response options

from 1 = “I never use the Internet” to 7 = “I very often use the Internet;” “How much experience do you have using the Internet?” allowing responses from 1 = “No experience at all” to 7 = “A great deal of experience;” and “Indicate your access to the Internet,” with responses of 1 = “It is extremely difficult for me to access the Internet” to 7 = “It is extremely easy for me to access the Internet.” Cronbach’s alpha = .825.

*Internet usage.* Assessments of Internet usage were adapted from Joiner et al. (2012). The frequency of online activities were indicated on a seven-point Likert-type scale ranging from 1 = never to 7 = every day. Activities include “social networking,” “watching videos,” and “downloading music.” Cronbach’s alpha = .841.

*University website experience.* Measures such as “I researched CSU online before deciding to attend” and “Before deciding to attend CSU, I researched other universities online” were used to assess relevant Internet experience on a seven-point Likert-type scale (1 = strongly disagree to 7 = strongly agree). Cronbach’s alpha for the six-item scale was .783.

*Two-factor items.* The presence or absence of hygiene and motivator factors may influence credibility assessments. Measures were informed by the work of Zhang, Small, von Dran, & Barcellos (1999). Responses were again measured on a seven-point Likert-type scale ranging from 1 = strongly disagree to 7 = strongly agree.

*Hygiene factors.* Participants indicated their responses to five statements such as “Using the website would be straightforward,” “The features needed to interact with the website were included on the homepage,” and “The appearance of the homepage made a good impression.” Cronbach’s alpha = .713.



*Motivator factors.* Among the four statements presented to the participants were “Useful features that I did not expect were included on the homepage,” “Irrelevant information was minimized,” and “The links were useful.” Cronbach’s alpha indicated weak item inter-correlations, .618.

**Dependent Variables.** Eye tracking data, thought listing items, and survey measures were also assessed. Specifically, eye tracking data includes fixation duration and backtracks. Recall items can be used to corroborate eye tracking inferences. Survey measures include assessments of user experience and source credibility.

*Eye tracking data.* Various aspects of gaze and fixations were recorded to enable direct observation of the features that are attended to visually.

*Gaze path.* The gaze path shows the route over which the participant visually explores the webpage.

*Gaze duration.* Gaze duration is a measure of the total time that the gaze path is devoted to a particular part of the webpage.

*Fixations.* Fixations are gazes that exceed 100 ms. The fixations are numbered in order of their occurrence. Their length is noted, as is the time elapsed in the exposure when they begin.

*Fixation duration.* The length of a fixation, in ms.

*Time to first fixation (TFFF).* This is a measure of the time elapsed until the first fixation. In this study, the range is from 0 to 10,000 ms.

*Areas of interest (AOIs).* Areas of interest are specifically designated areas of the page. Data can be aggregated for each area and compared with other areas. Four areas of interest were designated on the website prototypes. The first, expected to receive the most

attention, is the primary navigation bar (AOI1), the blue, lower portion of the navigation bar that contains the most common hyperlinks. The second is the secondary navigation bar (AOI2), the black, upper portion of the navigation bar that features less prominent hyperlinks. Third, are the one (exclusive) or two (accessible) text boxes (AOI3). The fourth designated area of interest is the primary image (AOI4).

***Thought listing.*** Participants were asked to “write anything that you thought or felt while viewing the web page.” In addition, they will be asked to recall and indicate “any features of the webpage that you just viewed that stand out.” This information adds insight to the interpretation of eye tracking data.

***Quality of the website user experience.*** Nine measures were adapted from Sauro (2015) to assess the quality of the website user experience. Items such as “The website appears easy to use,” “I would trust this website,” and “I find the website to be attractive” will be rated on a 1 to 7 scale (1 = strongly disagree to 7 = strongly agree). Cronbach’s alpha = .897.

***Source credibility (SC).*** Adapted from McCroskey and Teven (1999), three subscales, competence, goodwill, and trustworthiness, each comprised of six items, quantify relevant attributes on a Likert-type scale. Responses indicated range from 1 = strongly disagree to 7 = strongly agree (see Appendix E).

***Competence (SCC).*** Participants were asked “What was your impression of the organization whose website you just viewed?” They were instructed to indicate the extent to which they agree or disagree with the statement “The source of the website is...” for items such as “intelligent,” “uninformed,” and “competent.” Cronbach’s alpha = .831.

*Goodwill (SCG)*. Participants were asked to rate statements based on the impression that they got from the website. They were asked to indicate the extent to which they agree or disagree with the statement “I believe the source of the webpage...” for items such as “cares about me,” “is concerned with me,” and “is not understanding.” Cronbach’s alpha was .596.

*Trustworthiness (SCT)*. Participants were asked to rate statements based on the impression that they got from the website. They were asked to indicate the extent to which they agree or disagree with the statement “In my opinion, the source of the webpage is...” for items such as “honest,” “untrustworthy,” and “unethical.” Cronbach’s alpha = .802.

*Source/media credibility (SMC)*. Flanagin and Metzger (2000) developed a five-item measure of media credibility. The degree to which the information on the website is perceived to be “believable,” “accurate,” “trustworthy,” “biased,” and “complete” was measured on a Likert-type scale. Responses were indicated on a scale that ranged from 1 = not at all to 7 = extremely. Cronbach’s alpha = .764.

### **Experimental Analyses**

The next chapter will begin with an analysis of the preliminary investigation. Results of the content analysis of university website homepages were used to develop prototypes representative of accessible and exclusive homepages. Those prototypes served as the experimental manipulation to assess the influence of the website affordances, hyperlinks featured on the navigation bar in particular, on user credibility assessments of the site and the source.

The data will be analyzed to provide answers to the research questions posed and assess whether it provides support for the hypotheses.

## **CHAPTER IV**

### **RESULTS**

#### **Introduction to the Results**

As described in the previous section, a content analysis of a sample of university website homepages was used to inform the design of webpage prototypes. Hyperlinks, the primary area of interest, were surveyed, as were design elements essential to prototype construction. Those results are presented below. The prototypical representations of accessible and exclusive university web pages were then used as an experimental manipulation. The results of the experiment are presented in the second half of this section.

#### **Preliminary Investigation for Stimulus Selection Results**

**Analysis of preliminary investigation.** Among the options for reporting content analysis findings, the most common is the use of descriptive frequencies. The statistical significance of differences by type of university, accessible versus exclusive, can be assessed using the Chi-square statistic. This sample size is small, thus it violates some of the assumptions for using the Pearson Chi-Square statistic. Specifically, in some instances cell sizes have a count of less than five cases, compromising the significance of

the covariance of the group distributions. Nevertheless, valuable inferences can be made about the distribution of the data. Other differences, between continuously measured variables, can be evaluated with a *t*-test. Various frequencies, totals and percentages are summarized in Tables 2, 3, and 4.

Table 2. Most Prevalent Hyperlink Categories and Web Design Features

Hyperlink Category	Percentage (%) of Universities Featuring		
	Accessible	Exclusive	Total
Academics	100	100	100
Admissions	90	70	80
Athletics	80	80	80
Campus Life	80	80	80
Give; Giving	70	90	80
About	90	60	75
Information; Faculty & Staff	70	80	75
Alumni	60	80	70
Visit	80	50	65
Events (Calendars; News)	60	60	60
Design Feature			
Navigation Bar: Full Screen Width	90	90	90

Notes. Total  $N = 20$ ; Accessible  $N = 10$ ; Exclusive  $N = 10$

Table 3. Differentiating Hyperlink Categories and Website Design Features

Hyperlink Category	Percentage (%) Featuring		Difference	
	Accessible	Exclusive	$\chi^2$ (1)	<i>p</i>
Parents/Families	10	50	3.81	.051
Library/Research	90	20	9.90	< .01
Student Services (My...)	90	30	7.50	< .01
Directory (A-Z Index)	70	40	1.82	.178
Information (for Visitors)	80	50	1.98	.160
About	90	60	2.40	.121
Design Features				
OID: in Hyperlink Label	90	60	2.40	.121
OID: Logo	80	20	7.20	< .01
Primary Image: Full Screen Width	40	70	1.82	.18

Notes. Total *N* = 20; Accessible *N* = 10; Exclusive *N* = 10. OID = Organizational identifier

Table 4. Similar Website Design Features

	Number or Measurement, in inches		Difference	
	Accessible	Exclusive	<i>t</i>	<i>p</i>
Hyperlinks	13.1	11.3	$t(18) = 1.428$	.170
OID	3.1	2.0	$t(18) = 2.703$	< .05
Text Boxes	1.9	0.8	$t(18) = 1.36$	.19
Navigation Bar: Height	1.30	2.42	$t(9.3) = 1.76^{*1}$	.111 <sup>*1</sup>
Primary Image: Width	8.96	10.39	$t(18) = 1.689$	.108
Primary Image: Height	3.16	4.58	$t(18) = 3.441$	< .01

Notes. Total  $N = 20$ ; Accessible  $N = 10$ ; Exclusive  $N = 10$ .

<sup>1</sup> Navigation bar height conundrum; significant difference due to exclusive university homepages that were vastly different from the others (one vertical navigation bar; two split navigation bars).

**Summary of preliminary investigation results.** As summarized above, the content analysis identified features that are common to or that differentiate the accessible and exclusive university website homepages. Generally shared features are shown in Table 2. The most prevalent hyperlinks include Academics, Admissions, Athletics, Campus Life, Giving, and Information. The most ubiquitous structural feature is a full screen width navigation bar across the top half of the screen that features the



organizational identifier to the right of center. Other features vary by type of university. Some are shown in Tables 3 and 4.

Although Information for Parents/Families was featured by only 30% of the website homepages (absent on 14 of the 20 pages sampled for content analysis), there was a nearly significant difference in terms of differential representation by type of university. While evenly divided among exclusive universities (half featured, half did not), only 10% of accessible universities featured information for parents or families. The difference is notable, Pearson chi-square,  $\chi^2 (1) = 3.810, p = .051$ .

More significant differences were found with respect to the use of hyperlinks concerning Library/Research or Student Services. While overall Library/Research was moderately featured on 55% of the homepages, a distinct difference emerged by type of university. Ninety percent of accessible but only 20% of exclusive university homepages included a Library/Research hyperlink,  $\chi^2 (1) = 9.899, p < .01$ . A similar pattern was observed with respect to a Student Services hyperlink. Overall, 60% featured such a hyperlink, however, the usage notably differed by type of university. Ninety percent of accessible but only 30% of exclusive results in a significant Pearson chi-square,  $\chi^2 (1) = 7.500, p < .01$ .

Of potential interest is the difference between the total numbers of hyperlinks featured on the navigation bar. Accessible universities averaged slightly more ( $M = 13.10, SD = 2.47$ ) than exclusive universities ( $M = 11.30, SD = 3.13$ ),  $t (18) = 1.43, p = .170$ . This corroborates prior findings, specifically that as many as 13 links were not perceived to exceed moderate complexity (Geissler, Zinkhan, & Watson, 2006). While the mean difference between accessible and exclusive was not statistically significant, it

remains to be seen whether that difference is perceived by users and/or influences credibility judgments.

The number of search features did not statistically differ between accessible ( $M = 2.90$ ,  $SD = 1.10$ ) and exclusive ( $M = 2.40$ ,  $SD = 1.35$ ) universities. Overall, 2.6 search features were presented, on average. At least half of the exclusive sites used a search icon, a search box, and/or prominent placement. While not statistically significant, exclusive universities were more likely than accessible universities to feature the word *search*. The majority of accessible web pages also utilized the word *search* and was slightly more likely than exclusive universities to employ a search icon, a search box, and/or prominent placement.

The number of organizational identifiers differentiated accessible ( $M = 3.10$ ,  $SD = .99$ ) and exclusive ( $M = 2.00$ ,  $SD = .82$ ) universities,  $t(18) = 2.70$ ,  $p < .05$ . While the name of each university is prominently displayed, accessible university websites were more likely (90%) to integrate organizational identifiers with hyperlinks than exclusive universities (60%). The difference was not significant, but the degree to which logos are featured was. Only 20% of exclusive universities homepages included a logo, whereas 80% of accessible ones did,  $\chi^2(1) = 7.20$ ,  $p < .01$ .

The means of the heights and widths of the navigation bars (NB) require more information to be properly interpreted. The vast majority of the variance between the navigation bar widths of the accessible ( $M = 10.89$  inches,  $SD = 1.15$ ) and exclusive ( $M = 10.45$  inches,  $SD = 2.53$ ) universities is attributable to one exclusive university that featured a vertical navigation bar along the left edge of the screen. Without including it, the average navigation bar width of the exclusive universities increases to 11.25 inches.

In either case, the group differences are not significant. Both accessible and exclusive prototypes will feature full screen width navigation bars.

The vertical navigation bar similarly contributed to skewing the average navigation bar height of exclusive universities dramatically upward, but in this instance it was not alone. Two other exclusive university homepage designs utilized split navigation bars, comprised of narrow horizontal bands of hyperlinks framing the top and bottom of the primary image. The overall height of these two navigation bars ranged from half to the entire page height even though the combined height of the two bands alone was a mere fraction of the overall height. Since the goal here is to create a representative prototype, the vertical navigation bar was again dropped. The heights of the split navigation bars were recorded by adding the heights of the two bars. The distance separating them was not included. The resulting differences in navigation bar heights between accessible ( $N = 10, M = 1.30, SD = .28$ ) and exclusive ( $N = 9, M = 1.21, SD = .40$ ) university website homepages was not significant,  $t(18) = .56, p = .59$ . The overall average NB height was  $N = 19, M = 1.25, SD = .34$ . Thus, both prototypes will feature navigation bars that are full screen width and 1.25 inches in height. Further, since the navigation bar was consistently divided into two bands, which tended to feature different hyperlinks, that design feature was included. Guided by the data, the navigation bar was divided horizontally, with the bottom 60% designated as the primary navigation bar (PNB), and the upper 40% as the secondary navigation bar (SNB).

The fonts used for hyperlinks and organizational identifiers varied in size and style. Due to variations in size by style, measures were standardized relative to the font Calibri, which was featured on many of the sites. The heights of all other type styles were

compared to Calibri and the corresponding font size was recorded. There was no significant difference between the smallest and largest hyperlink fonts used on accessible (smallest  $M = 8.8$ ,  $SD = 1.32$  and largest  $M = 10.0$ ,  $SD = 1.49$ ) and exclusive (smallest  $M = 8.4$ ,  $SD = 1.06$  and largest  $M = 9.9$ ,  $SD = 2.00$ ) university website homepages,  $t(18) = .84$ ,  $p = .41$  and  $t(18) = .19$ ,  $p = .85$ , respectively. The overall ( $N = 20$ ) average font sizes ranged from 8.6 ( $SD = 1.18$ ) to 9.9 ( $SD = 1.72$ ), thus prototype hyperlinks will be presented in Calibri 9 and 10.

The same process described above was employed to assess the font size used for the primary organizational identifier. Differences by group were again not significant. The overall ( $N = 20$ ) average font size was 27.6 ( $SD = 12.28$ ), thus prototype primary organizational identifiers will be presented in Calibri 28.

The variables described in Tables 2 through 4 were used to develop accessible and exclusive homepage prototypes. Hyperlink categories that featured a variety of terms, such as Events, are represented by the most frequently used term. Summaries of the prototypical webpage attributes, those that are shared and that differentiate, are shown in Tables 5 and 6 and described below.

*Shared prototypical webpage attributes.* One of the notable shared structural features is the height and width of the navigation bar. The navigation bar was the same height for both prototypes and full screen width. Both prototypes shared seven common hyperlinks: Academics, Admissions, Athletics, Campus Life, Give, Alumni, and Visit. Both also used the same font and font sizes (see Table 5).

Table 5. Summary of Shared Prototypical Webpage Attributes

Accessible and Exclusive	
Hyperlinks	<ul style="list-style-type: none"> <li>• Academics</li> <li>• Admissions</li> <li>• Athletics</li> <li>• Campus Life</li> <li>• Give</li> <li>• Alumni</li> <li>• Visit</li> </ul>
Search Features	<ul style="list-style-type: none"> <li>• <math>M = 2.6</math></li> </ul>
Organizational Identifiers	<ul style="list-style-type: none"> <li>• Organizational identifiers featured in hyperlink</li> </ul>
Navigation Bar	<ul style="list-style-type: none"> <li>• Full screen width</li> <li>• Overall height <math>M = 1.25</math> in               <ul style="list-style-type: none"> <li>○ PNB height <math>M = 0.75</math> in</li> <li>○ SNB height <math>M = 0.50</math> in</li> </ul> </li> </ul>
Font Size (standardized to Calibri)	<ul style="list-style-type: none"> <li>• Hyperlinks: Calibri sizes 9 and 10</li> <li>• Primary Organizational Identifier, Calibri size 28</li> </ul>

*Differentiating prototypical webpage attributes.* The most visually distinct difference was the size of the primary image, which was much larger for the exclusive prototype. The accessible webpage was designed with two textboxes, the exclusive with one. The prototypes also varied in total number of hyperlinks. In addition to the seven hyperlinks shared, the accessible and exclusive prototypes featured six and four additional ones, respectively (see Table 6).

Table 6. Summary of Differentiating Prototypical Webpage Attributes

	Accessible	Exclusive
Hyperlinks	$M = 13.1$	$M = 11.3$
	<ul style="list-style-type: none"> <li>• About</li> <li>• Information</li> <li>• Calendars</li> <li>• Research</li> <li>• My...</li> <li>• A-Z Index</li> </ul>	<ul style="list-style-type: none"> <li>• About Univ</li> <li>• Faculty &amp; Staff</li> <li>• News</li> <li>• Parents/Families</li> </ul>
Organizational Identifiers	$M = 3.10$	$M = 2.00$
	<ul style="list-style-type: none"> <li>• Logo featured</li> </ul>	<ul style="list-style-type: none"> <li>• No logo featured</li> </ul>
Text boxes	$M = 1.70$	$M = 1.27$
Primary Image	<ul style="list-style-type: none"> <li>• Less likely to be full screen (40%)</li> <li>• Width <math>M = 8.96</math> in</li> <li>• Significantly less in height, <math>M = 3.16</math> in</li> </ul>	<ul style="list-style-type: none"> <li>• More likely to be full screen width (70%)</li> <li>• Width <math>M = 10.39</math> in</li> <li>• Significantly greater in height, <math>M = 4.58</math> in</li> </ul>

**Discussion of preliminary investigation.** As expected, many of the features and design elements are similar. There are, however, some distinct differences between accessible and exclusive university website homepages. Those differences were used to design prototypical representations (See Appendix D, Figures D1 and D2 for the webpage prototypes). Images used were obtained from FreeImages.com and Gratisography.com. The prototypes, accessible and exclusive, served as the experimental manipulation for the laboratory portion of the study.

## Experimental Results

This section presents the results of the data analysis. The overall purpose of the experiment was to evaluate any differences that may be due to design elements that distinguish the accessible from the exclusive university web pages. The MAIN model suggests that peripheral differences may influence perceptions of credibility. Thus, differences in credibility will be evaluated, as will other variables that may be associated with those differences. The degree to which the variables covary will also be assessed to answer the research questions and test the hypotheses that were posed in Chapter 2.

**Experimental sample.** The data from all 76 of the participants were included in the analysis. Forty-eight of the study participants (63.2%) were male and 28 (36.8%) were female. The ages ranged from 18 to 50, with a mean of 23.5 years ( $SD = 5.49$ ). In terms of racial composition, the sample was primarily White, not Hispanic or Latino (39.5%,  $N = 30$ ) and Middle Eastern (30.3%,  $N = 23$ ), followed by 17.1% Black or African American ( $N = 13$ ). The remainder was Asian or Asian American (6.6%,  $N = 5$ ), Hispanic or Latino (2.6%,  $N = 2$ ), and other (3.9%,  $N = 3$ ). With regards to their student status, 26.3% of the participants were freshmen ( $N = 20$ ), 23.7% sophomores ( $N = 18$ ), 28.9% juniors ( $N = 22$ ), and 18.4% were seniors ( $N = 14$ ). Two participants (2.6%) reported their current standing as “other.” On average, the participants reported being a student at CSU for 3.63 semesters ( $SD = 2.92$ ).

**Experimental manipulation.** Before proceeding, the manipulation check allows an assessment of the degree to which the accessible and exclusive prototypes were perceived as intended. A composite measure of the four items was created by reverse

coding the public university items and calculating a mean value. Thus, values less than four are indicative of perceiving that the webpage is representative of a public university, with smaller numbers reflecting stronger agreement. Conversely, values greater than four indicate perceptions that the webpage is representative of a private university, and larger numbers signify stronger agreement. An independent samples *t*-test indicated a non-significant difference,  $t(74) = .48, p = .64$ , between the two conditions. Participants who viewed the accessible webpage slightly perceived the webpage to be that of a public university ( $M = 3.76, SD = 1.50$ ), while those who viewed the exclusive webpage did as well, but were nearly neutral in their assessment ( $M = 3.91, SD = 1.36$ ). A closer inspection of responses to the individual items allows an interesting observation to be made about perceptions of the web pages. Participants in both conditions were overwhelmingly neutral about the homepage that they viewed being from a public university (4 = neither agree nor disagree). Whether they viewed the accessible or the exclusive prototype, on average participants neither agreed nor disagreed that “The homepage seems representative of a private university” ( $M = 4.00, SD = 2.00$  and  $M = 4.00, SD = 1.58$ , respectively). However, all other items revealed responses that were weak yet consistent with the accessible condition (see Table 7). The exclusive prototype, while perceived as “less public” than the accessible prototype, was not correctly perceived. The observed differences, although consistent and in the correct direction, were not statistically significant. Since the manipulation check failed to demonstrate that the website homepages were perceived as significantly different, there can thus be no confidence that any observed differences are related to the manipulation. Accordingly, the two conditions cannot be compared to each other.



Table 7. Manipulation Check Scale and Item Statistics by Condition

	Accessible		Exclusive	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
Scale Mean	3.76	1.50	3.91	1.36
1. Private	3.82	1.83	3.92	1.75
2. Not Private (R)	3.44	2.00	3.78	1.70
3. Public (R)	4.00	2.00	4.00	1.58
4. Not Public	3.77	1.91	3.95	1.62

Notes. Higher responses are indicative of perceptions that the university is private; lower responses are indicative of public. A neutral response of 4.00 indicates neither

**Research question 1.** Research Question 1 asked, “Will the number of hyperlinks be associated with perceptions of credibility?” The accessible website homepage had 13 hyperlinks, whereas the exclusive featured 11. As for perceptions of credibility, it was assessed in a variety of ways. A five-item measure was used to assess source/media credibility (SMC; Flanagin & Metzger, 2000). In addition, three subscales, competence (C), goodwill (G), and trust (T), were adapted from McCroskey and Teven’s (1999) measure of source credibility (SC). The six items of the goodwill subscale, however, were poorly intercorrelated (Cronbach’s alpha = .596). A principal components factor analysis (see Appendix G) revealed two distinct facets of the goodwill subscale. Thus, for this study, the positive and negative components of the goodwill subscale were examined

separately. Positive source credibility goodwill (SCG+) is comprised of the items “cares about me,” “has my interests at heart,” and “is concerned with me” (Cronbach’s alpha = .858). Negative source credibility goodwill (SCG-) is comprised of the reverse-coded items “is self-centered,” “his insensitive,” and “is not understanding” (Cronbach’s alpha = .700). Reliability statistics and correlations for credibility scales are shown in Table 8.

Table 8. Correlations and Reliability of Credibility Scales

	1	2	3	4	5
1. SC Competence	.831				
2. SC Goodwill, positive	.296*	.858			
3. SC Goodwill, negative	.410**	-.066	.700		
4. SC Trust	.771**	.162	.466**	.802	
5. Source/Media Credibility	.721**	.380**	.289*	.671**	.764

Notes. N = 76. \*\* Correlation is significant at the 0.01 level (2-tailed). \*Correlation is significant at the 0.05 level (2-tailed). Cronbach’s Alpha on Diagonal

To assess the association of number of hyperlinks with perceptions of credibility, an independent samples *t*-test was performed. Results indicate that credibility assessments of the webpage with thirteen hyperlinks were consistently higher than those of the webpage with eleven, but not significantly higher. Only source credibility competence and source media credibility composite means differed by number of hyperlinks at a significance level less than .10 ( $p = .069$  and  $p = .093$ , respectively; see Table 9). However, as previously noted, since the manipulation check indicated that the

conditions were similarly perceived, any differences cannot be attributed to features differentially associated with the conditions.

Table 9. Credibility Statistics and Independent Samples t-Test of Differences by Number of Hyperlinks

	Number of Hyperlinks	<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i> (74)	<i>p</i> (2-tailed)
SC Competence	13	39	4.77	1.117	1.84	.069
	11	37	4.33	0.931		
SC Goodwill, positive	13	39	3.64	1.442	0.15	.879
	11	37	3.59	1.179		
SC Goodwill, negative	13	39	4.64	1.130	0.80	.424
	11	37	4.44	1.028		
SC Trust	13	39	4.82	0.919	1.02	.311
	11	37	4.60	0.896		
Source/Media Credibility	13	39	4.63	1.15	1.70	.093
	11	37	4.19	1.074		

**Hypothesis 1.** Hypothesis 1 proposed that users with more Internet experience are more likely to apply heuristics and thus make non-neutral credibility judgments than users with less Internet experience. Internet experience measures include Internet experience, Internet usage, and university website experience. As previously discussed,

there is minimal information on the webpage with which to objectively assess credibility. Objective responses are likely to be a neutral score of “4.” Responses much higher or lower than “4” can be interpreted as evidence of heuristic processing. Thus, all credibility measures greater than 3.5 and less than 4.5 were designated as neutral, and all other values as non-neutral. Independent samples *t*-tests indicated significant differences, with higher levels of university website experience associated with non-neutral source credibility ratings on competence, negative goodwill, and trust. See Table 10. There is thus support for Hypothesis 1.

Table 10. Descriptive and Independent Samples *t*-Test, University Website Experience by Neutral and Non-Neutral Credibility

		<i>N</i>	<i>M</i>	<i>SD</i>	<i>t</i> (74)	<i>p</i>
SC Competence (SCC)	0 (neutral)	29	4.17	1.276	2.36	.021
	1 (not)	47	4.85	1.195		
SC Goodwill, negative (SCG-)	0	33	4.25	1.319	2.09	.041
	1	43	4.85	1.169		
SC Trust (SCT)	0	36	4.22	1.323	2.49	.015
	1	40	4.92	1.123		

**Hypothesis 2.** Hypothesis 2 stated that users with more experience with university websites are more likely to apply heuristics and thus make non-neutral credibility judgments. An examination of relationships among measures of Internet

experience and credibility shows that Internet experience and university website experience in particular, has a positive association with credibility judgments (see Table 11).

Table 11. Pearson Correlations and Reliability of Internet Experience and Credibility Scales

	1	2	3	4	5	6	7	8
1. Internet Experience	.825							
2. Internet Usage	.132	.841						
3. University Websites	.273*	.301**	.783					
4. SCC	.079	-.110	.230*	.831				
5. SCG+	-.238*	-.055	.127	.296*	.858			
6. SCG -	.120	-.118	.211	.410**	-.066	.700		
7. SCT	.091	-.003	.330**	.771**	.162	.466**	.802	
8. SMC	.041	-.078	.224 <sup>A</sup>	.721**	.380**	.289*	.671**	.764

Notes. N =76. \*\* Correlation is significant at the 0.01 level (2-tailed). \*Correlation is significant at the 0.05 level (2-tailed). <sup>A</sup> Correlation significance = .051 (2-tailed). Cronbach's Alpha on Diagonal

Recency of relevant experience was also considered. The number of semesters at CSU and specific university website experience were assessed relative to credible versus non-credible scores on credibility using independent samples *t*-tests. Fewer semesters at CSU may be associated with more recent experience in terms of using online resources to

research universities, particularly for participants that indicated that they researched online, CSU and/or other universities, before deciding to attend CSU. Once again, credibility measures greater than 3.5 and less than 4.5 were designated as neutral, all other values as non-neutral. With regards to participants who did ( $N = 53$ ) or did not ( $N = 23$ ) research other universities online before deciding to attend CSU, there was no significant difference in number of semesters at CSU on neutral or non-neutral evaluations of credibility. However, when participants who researched CSU online before deciding to attend ( $N = 57$ ) were evaluated separately from those who did not ( $N = 19$ ), some differences emerged. In terms of neutral and non-neutral source credibility competence, those who researched CSU online varied significantly on number of semesters at CSU,  $t(54.100) = 2.14, p = .037$ . Those who gave a neutral assessment of competence ( $N = 19$ ) reported fewer semesters at CSU ( $M = 2.42, SD = 1.387$ ) than those who gave a non-neutral assessment of competence ( $N = 38, M = 3.74, SD = 3.252$ ). Similarly, participants who did not research CSU online, in terms of source credibility trust, also significantly varied on number of semesters at CSU,  $t(17) = 2.50, p = .023$ . Those who gave a neutral assessment of trust ( $N = 14$ ) reported fewer semesters at CSU ( $M = 3.71, SD = 2.335$ ) than those who gave a non-neutral assessment of trust ( $N = 5, M = 7.20, SD = 3.564$ ). In both cases, non-neutral credibility assessments were associated with more semesters at CSU, thus less recent experience researching universities online (see Table 12).

It is important to note the likelihood that overall experience accrues over time and plays a more important role than one particular type of experience. As academic coursework now routinely utilizes online resources, that overall experience may exert a

more substantial influence than one particular type of experience. Thus, recent experience, as determined by number of semesters at CSU, was not associated with credibility. Overall Internet experience, however, particularly with university websites, was significantly associated with credibility, evidence that supports Hypothesis 2.

Table 12. Number of Semesters at CSU by Researching CSU Online and Neutral Versus Non-Neutral Credibility

		I researched CSU online before deciding to attend.					
		No			Yes		
		<i>N</i>	<i>M</i>	<i>SD</i>	<i>N</i>	<i>M</i>	<i>SD</i>
Credibility	Neutral	14	3.71	2.335	19	2.42	1.387
	Non-neutral	5	7.20	3.564	38	3.74	3.252

**Hypothesis 3.** The third hypothesis proposed a positive relationship between hygiene factors and credibility: User perceptions of hygiene factors that fail to meet expectations will be associated with lower levels of credibility than perceptions of hygiene factors that meet or exceed expectations. The significant results in Table 13 provide support for H3. Hygiene factors are significantly correlated with all measures of credibility.

Table 13. Pearson Correlations of Hygiene Factors with Credibility

	Hyg	SCC	SCG+	SCG-	SCT	SMC
Hygiene (Hyg)	.713					
SC Competence (SCC)	.634**	.831				
SC Goodwill, positive (SCG+)	.461**	.296**	.858			
SC Goodwill, negative (SCG-)	.267*	.410**	-.066	.700		
SC Trust (SCT)	.514**	.771**	.162	.466	.802	
Source/Media Credibility (SMC)	.616**	.721**	.380**	.289	.671**	.764

Notes: \* Correlation is significant at the 0.05 level (2-tailed); \*\* Correlation is significant at the 0.01 level (2-tailed). Cronbach's Alpha on Diagonal

**Hypothesis 4.** Similarly, Hypothesis 4 proposed a positive correlation between motivator factors and credibility: User perceptions of motivator factors that meet or exceed expectations will be associated with higher levels of credibility than perceptions of motivator factors that do not meet expectations. The correlation table below indicates significant positive relationships between motivator factors and most measures of credibility (see Table 13). This is support for Hypothesis 4: there are significant positive correlations of motivation with all measures of credibility with the exception of the negative component of the Goodwill subscale.



Table 14. Pearson Correlations of Motivator Factors with Credibility

	Mot	SCC	SCG+	SCG-	SCT	SMC
Motivators (Mot)	.618					
SC Competence (SCC)	.561**	.831				
SC Goodwill, positive (SCG+)	.286*	.296**	.858			
SC Goodwill, negative (SCG-)	.054	.410**	-.066	.700		
SC Trust (SCT)	.458**	.771**	.162	.466	.802	
Source/Media Credibility (SMC)	.617**	.721**	.380**	.289	.671**	.764

Notes: \* Correlation is significant at the 0.05 level (2-tailed); \*\* Correlation is significant at the 0.01 level (2-tailed). Cronbach's Alpha on Diagonal

**Research question 2.** Overall number of hyperlinks did not appear to be significantly associated with perceptions of credibility, but perhaps certain types of hyperlinks may be associated with higher levels of credibility than others. Eye tracking data was used to address Research Question 2, “Will certain types of hyperlinks be differentially associated with perceptions of credibility?” Specific fixation durations, in milliseconds (ms), were assessed. Total fixation duration is the sum of all fixations, an eye gaze that lingers for more than 100 ms on a specific area. While the primary portion of the navigation bar attracted a considerable amount of visual attention, an independent

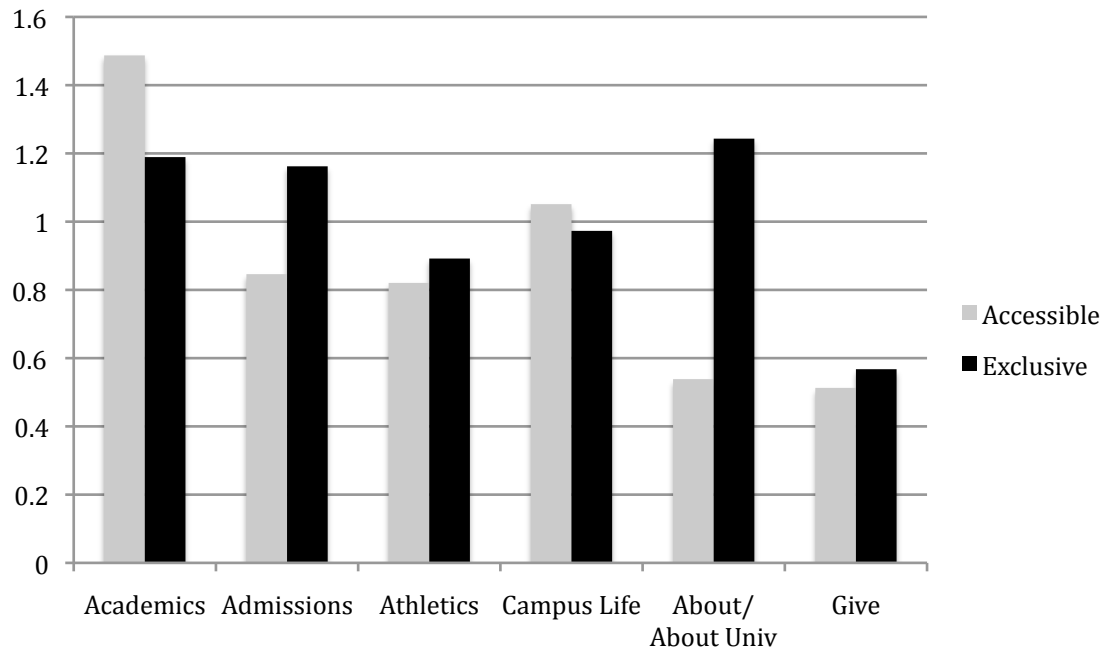
samples *t*-test revealed no significant group difference,  $t(74) = .30, p = .764$ . Accessible total fixation durations ( $M = 1,860.26$  ms,  $SD = 1,407.783$ ) were observed slightly less than but similar to exclusive ( $M = 1,965.89$  ms,  $SD = 1,643.790$ ). Both groups viewed most hyperlinks (Academics, Admissions, Athletics, Campus Life, and Give) similarly (see Table 15). However, there was significant variation,  $t(60.115) = 2.62, p = .011$ , on About (accessible  $M = 108.03, SD = 169.870$ ) and About Univ (exclusive  $M = 244.54, SD = 269.802$ ). Figure 4 graphically illustrates the average number of fixations per respondent on the most viewed hyperlinks and the statistically significant difference between About and About Univ. Further, there was a weak association,  $r = -.21, p = .07$ , between fixations on About/About Univ and positive Goodwill measures of Source Credibility. Thus, there is some evidence that certain types of hyperlinks are differentially associated with perceptions of credibility.

For a visual aid to augment the discussion of the eye tracking data, refer to the Heat Maps in Figures 5 and 6. The visual heat maps show a cumulative representation of the eye gaze of all of the participants, superimposed on the stimuli that they viewed (Manhartsberger & Zellhofer, 2005). Red represents the highest concentrations, and yellow and green diminishing amounts of visual attention.

Table 15. Mean Fixation Durations in Milliseconds and Independent Samples *t*-Test of Differences by Condition

	Accessible ( <i>N</i> = 39)		Exclusive ( <i>N</i> = 37)		Means Test	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>t</i>	<i>p</i>
Academics	332.31	349.232	309.57	354.053	.28	.78
Admissions	182.44	244.471	264.49	334.038	1.23	.22
Athletics	219.54	325.334	242.00	298.659	.31	.76
Campus Life	241.21	395.693	229.32	219.702	.16	.87
About / About Univ	108.03	169.870	244.54	269.802	2.62	.01
Give	110.64	164.512	122.54	173.561	.31	.76
Primary Navigation Bar	1860.26	1407.783	1965.89	1643.790	.30	.76
Secondary Navigation Bar	394.82	450.943	657.89	756.793	1.83	.07
Text Boxes	1061.62	1062.230	853.08	870.849	.93	.35
Image	1084.21	739.543	1316.97	1256.363	.99	.33

Figure 4. Average Number of Fixations Per Respondent on Primary Navigation Bar Hyperlinks, by Condition



In terms of total fixation times, the secondary portion of the navigation bar received less attention ( $M = 522.89$ ,  $SD = 628.859$ ) than the primary portion ( $M = 1911.68$ ,  $SD = 1517.875$ ). According to an independents samples  $t$ -test, more time was spent visually fixated on the secondary portion of the navigation bar of the exclusive webpage ( $M = 657.89$ ,  $SD = 756.793$ ) than the accessible one ( $M = 394.82$ ,  $SD = 450.943$ ), but the difference was not statistically significant,  $t(58.093) = 1.83$ ,  $p = .073$ . Further, there were no significant correlations between visual measures of attention in the AOI and any measures of credibility.

Figure 5. Aggregate Heat Map, Accessible

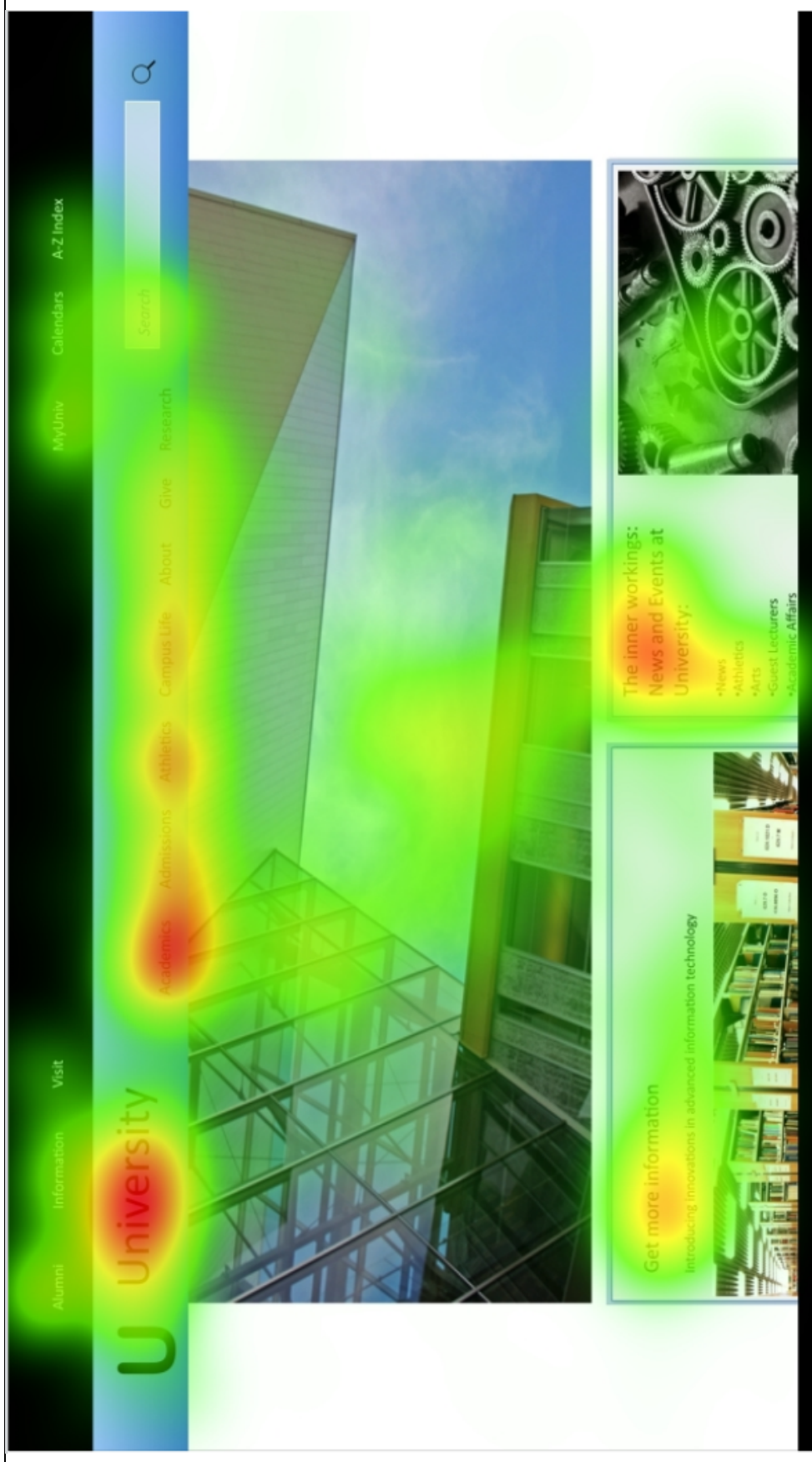
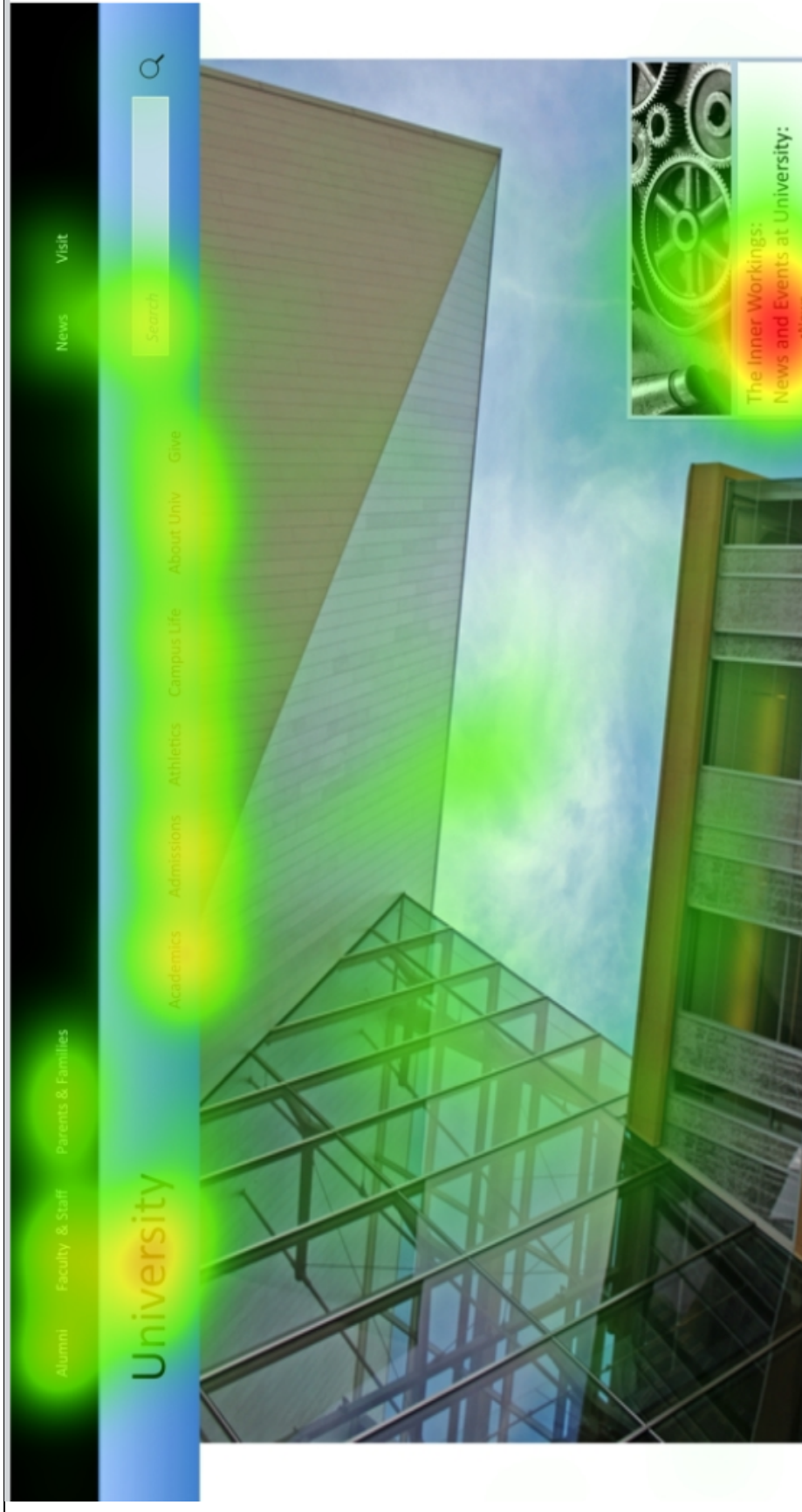


Figure 6. Aggregate Heat Map, Exclusive



**Research question 3.** Another of the designated visual areas of interest (AOIs) on the webpage was the primary image, on which the groups significantly differed on average fixation duration based on an independent samples *t*-test,  $t(509.886) = 2.33, p < .05$ . Viewers of the exclusive prototype had longer fixations ( $M = 183.19, SD = 81.41$ ) than viewers of accessible prototype ( $M = 167.79, SD = 69.07$ ). This observation leads to Research Question 3, “Will other design features be associated with perceptions of credibility?” Overall, total gaze time was on the primary image was significantly correlated with SC positive goodwill, Pearson  $r = .28, p = .016$ . It is tempting to think that fixations were longer on the exclusive webpage simply because the image was bigger and immediately captured and held viewers’ attention. However, during the 10-second (10,000 ms) exposure, fixations on the primary image began earlier for those in the accessible ( $M = 1.385.9, SD = 2,838.55$ ) rather than the exclusive condition ( $M = 2.272.1, SD = 3,263.53$ ). Although determined with an independent samples *t*-test to not be a statistically significant difference,  $t(74) = 1.27, p = .210$ , the first fixations on the exclusive image began, on average, later than the accessible.

As for the text boxes, designated as Area of Interest 3, there was a significant negative correlation, Pearson  $r = -.24, p = .038$ , between source credibility positive goodwill and total time spent visually fixated on aspects of the text box(es). Total gaze time differed only somewhat according to an independent samples *t*-test,  $t(74) = 1.82, p = .073$ , with accessible higher ( $M = 2558.41, SD = 1494.748$ ) than exclusive ( $M = 1996.05, SD = 1167.087$ ). There is, thus, some evidence that other design features are significantly associated with perceptions of credibility: a positive relationship between

gaze time on the primary image and SC goodwill and a negative relationship between time spent looking at the text box(es) and SC positive goodwill.

**Research question 4.** Research Question 4 asked Do participants with long gaze duration on hyperlinks report higher credibility ratings? In other words: Is there a positive correlation between the overall amount of time spent looking at hyperlinks and credibility ratings? Pearson correlations between fixation duration on the most viewed primary navigation bar hyperlinks and measures of credibility were assessed (See Table 16). No significant relationship was found between visual attention to the hyperlinks and ratings of credibility. There is thus no evidence of any relationship between gaze duration and credibility ratings.

Table 16. Pearson Correlations of Primary Navigation Bar Hyperlink Fixation Durations with Credibility

	SCC	SCG+	SCG-	SCT	SMC
Academics	.021	.138	.014	-.037	-.019
Admissions	-.006	.140	.024	-.088	.022
Athletics	-.086	.001	.048	-.043	-.055
Campus	-.136	.074	-.035	-.185	-.089
About	-.048	-.209	.097	.036	-.084
Give	.029	-.179	.078	.008	-.115



**Research question 5.** Research Question 5 asked if long gaze duration is associated with thought listing recall items. In other words, will there be any correlation between visual attention to and recollection of specific features? Recall items were reported immediately after viewing the webpage (“Please write down at least one feature of the webpage that you just viewed that stands out in your memory”) and were used to aid in interpretation. The items recalled were first categorized. The most frequent responses were recollections about hyperlinks (AOI1 & AOI2), organizational identifiers (AOI1), and primary image (AOI4). Pearson correlations between corresponding AOI recall and AOI fixation duration were assessed. No difference on total fixation durations on the navigation bars was found between those who did and did not recall hyperlinks. It is worth noting however that only 18 of the 76 participants (23.68%) reported that any of the hyperlinks stood out in their memory.

The same categories were again assessed, this time using Chi Square analysis. The three most frequent thought recall categories, hyperlinks, organizational identifiers, and primary image, were coded as being recalled or not being recalled. Each category was then cross tabulated with low versus high levels of gaze and fixation durations for the corresponding areas of interest. Duration levels were determined by dividing at the mean: low levels were less than or equal to the mean; high levels were greater than the mean. None of the results were statistically significant. The two results nearest to significance were relative to recall of hyperlinks and primary image, but were significant at slightly greater than .10. There is thus no evidence to suggest that gaze duration is associated with thought listing recall items that stand out in the user’s memory. All of the results described in this section and above are summarized in Table 17.

Table 17.1. Research Questions and Hypotheses Results

RQ1	Will the number of hyperlinks be associated with perceptions of credibility?	Consistent, but not significant.
H1	Users with more Internet experience are more likely to apply heuristics and thus make non-neutral credibility judgments than users with less Internet experience.	Support with respect to University Website experience and Source Credibility, Competence, Trust, and negative Goodwill.
H2	Users with more experience with university websites are more likely to apply heuristics and thus make non-neutral credibility judgments than users with less experience with university websites.	Yes. In particular, Internet experience was significantly associated with SCG+; experience with U. websites with SCC & SCT
H3	There will be a positive relationship between hygiene factors and perceptions of credibility.	Support; significant positive correlation between hygiene factors and most perceptions of credibility

Table 17.2. Research Questions and Hypotheses Results, continued

H4	There will be a positive relationship between motivator factors and perceptions of credibility.	Support; significant positive correlation between motivators and perceptions of credibility
RQ2	Will certain types of hyperlinks be differentially associated with perceptions of credibility?	Significant differences on About/About Univ, but association with credibility not significant.
RQ3	Will other design features be associated with perceptions of credibility?	Yes. SC goodwill was positively associated with primary image gaze duration and negatively associated with text box(es) gaze duration.
RQ4	Do participants with long gaze duration on hyperlinks report higher credibility ratings?	No.
RQ5	Will longer gaze duration be associated with higher levels of recall?	No.

### **Additional Analyses**

The results described above suggest that hygiene and motivator factors and university website experience are the strongest predictors of credibility. To assess the relationship, an overall measure of credibility was calculated as the average of the source credibility subscales and source/media credibility. That measure was then regressed on the linear combination of hygiene, motivators, and university website experience. The correlations and regression model are shown in Tables 18 and 19.

Semipartial or part correlations ( $sr$ ) are measures of the unique contribution of each variable. Thus, the squared value of the semipartial correlation ( $sr^2$ ) indicates the percentage of the variance in the DV uniquely accounted for or predicted by a variable. Hygiene factors predict 19% of the variance in overall credibility ( $sr^2 = .19$ ), whereas motivator factors and university website experience contribute 3% each ( $sr^2 = .03$ ). Overall, the model predicts 55% of the variance in overall credibility ( $R^2 = .55$ ).

Table 18. Pearson Correlations Among Variables in Revised Model

	Average Credibility	Hygiene	Motivator	U. Website Experience
Average Credibility	1.00			
Hygiene	.69**	1.00		
Motivator	.58**	.58**	1.00	
U. Website Experience	.30**	.15	.25*	1.00

Notes: \* Correlation is significant at the 0.05 level; \*\* Correlation is significant at the 0.01 level.

Table 19. Summary of Regression Model Predicting Overall Credibility

Model	<i>B</i>	<i>SE<sub>B</sub></i>	$\beta$	<i>t</i>	<i>sr<sup>2</sup></i>
Model: $F(3, 72) = 29.11, R^2 = .55^*$					
Hygiene	.41	.07	.53	5.50**	.19
Motivator	.18	.08	.23	2.31*	.03
University Website Experience	.11	.05	.16	2.01*	.03

Notes:  $p < .05^*$ ;  $p < .01^{**}$

## **CHAPTER V**

### **DISCUSSION**

The goal of this study was to examine university website homepage hyperlinks in the context of the MAIN model. Specifically, this was a preliminary investigation to determine, first, if accessible and exclusive universities differed in terms of the number and types of hyperlinks featured and, second, if that difference was associated with credibility judgments. Other factors relevant to heuristic processing and credibility were also evaluated. Prior Internet experience, particularly with university websites, was expected to facilitate heuristic processing, increasing the likelihood of reliance on peripheral cues to make credibility judgments. In other words, more experience with university websites should be associated with non-neutral credibility judgments. In addition, per the two-factor theory, the presence of web elements that meet user expectations should have a positive relationship with credibility judgments.

Prior research has shown that clear layout and display were connected to positive first impressions of trustworthiness (Briggs, Burford, De Angeli, & Lynch, 2002). Hyperlinks in particular can serve not merely as a means of enabling users to become more familiar with the website content, but as peripheral cues that influence overall

perceptions of the organization. The content analysis that informed the prototype development found relatively little variation among the hyperlinks and design attributes of accessible and exclusive university website homepages. Subsequently, although the resulting prototypes were consistently perceived correctly, the differences were not significant, thus the experimental manipulation did not provide an empirical basis for comparison. However, many of the results were as predicted by the MAIN model and two-factor theory. Those findings are summarized below.

### **Summary of Results**

**Preliminary investigation results.** Five research questions formed the basis of the preliminary investigation, a content analysis of hyperlinks and formal features of a sample of accessible and exclusive universities.

***Content analysis research questions 1 and 2.*** The first question, “What hyperlinks are predominately featured on the majority of university website homepages” contributed greatly to the design of prototypes. Overall, 17 hyperlinks dominated the sample (refer to Tables 5 and 6). Question 2 asked, “Which hyperlinks are presented to similar extents?” The content analysis revealed that ten different categories were frequently present on both types of homepages, consistent with prior observations of little variation. Seven specific hyperlinks were most prevalent and were presented to similar extents by accessible and exclusive website homepages: Academics, Admissions, Athletics, Campus Life, Give (or Giving), Alumni, and Visit.

***Content analysis research question 3.*** The answer to content analysis research question 3 revealed that some hyperlinks, however, were differentially featured. Overall, there was an average of 13.1 hyperlinks on accessible web pages, 11.3 on exclusive ones.

The two types of universities sometimes offered virtually the same information, but varied hyperlink labels. For example, while accessible university homepages offered the hyperlink About, exclusive universities were more likely to include an organizational identifier (e.g., About Kenyon, About Wooster, etc.). Three less similar, but corresponding pairs of hyperlinks were: Information versus Faculty & Staff, and Calendars versus News. Four hyperlinks in particular were differentially presented. Exclusive homepages featured the link Parents & Families much more frequently than accessible homepages. The opposite was true for Research, A-Z Index, and My followed by an organizational identifier. Thus, as expected, certain design standards prevailed, but there were slight differences.

*Content analysis research questions 4 and 5.* As for the basic structural elements, both types of homepages tended to feature full screen width navigation bars that were similar in height and screen location. The majority also featured an organizational identifier on the left side of the navigation bar and, on average, between two and three search features on the right side. The most visually notable difference was the size of the primary image. Exclusive universities tended to present full screen width photos, whereas accessible website homepages were more likely to feature a much small image. The overall appearance of the exclusive pages were sparer, averaging less than one text box, compared to 1.9 for accessible homepages.

**Experimental results.** The manipulation check indicated that there was no significant difference in perceptions of the type of website homepage viewed, whether representative of a public or a private university, based on which prototype presented. It is thus important to note that, despite that indication that differences in perception by



condition were consistently in the direction predicted, the non-significant result draws into question all subsequent findings. Three questions examined the relationship between peripheral features and credibility perceptions.

***Experimental research question 1.*** The number of hyperlinks was consistently associated with credibility. Participants who viewed the accessible website, with 13 hyperlinks, assessed all measures of credibility higher than those who viewed the exclusive website with 11 hyperlinks. The differences, however, were not statistically significant, so do not provide evidence of an association between number of hyperlinks and perceptions of credibility. Moreover, because the manipulation check failed to ascertain that the university website homepage prototypes were perceived as intended, the experimental conditions cannot be compared.

Further, according to the MAIN model, technology affordances cue heuristic processing, which prompts credibility judgments. As previously discussed, prior research has found number of links to be associated with perceptions of complexity (Geissler, Zinkhan, & Watson, 2006), which has in turn been found to positively influence perceptions (Sundar, 2015). However, Geissler et al. (2006) determined that up to 13 links were perceived as not exceeding moderate complexity. In this study, neither prototype exceeded that threshold, so the influence of hyperlinks is likely to be equivalent for the accessible and exclusive conditions.

***Experimental hypotheses 1 and 2.*** Support was found for the hypothesized relationships between Internet experience and credibility. Participants with more Internet experience were more likely to make non-negative credibility judgments than participants with less Internet experience. Significant differences for source credibility trust,

competence, and goodwill provide evidence of heuristic processing, reliance on peripheral cues to make global judgments. Relevant experience with university websites in particular was most strongly associated with source credibility competence and source credibility trust. These results are consistent with what is known about the heuristic processes underlying the MAIN model.

***Experimental hypotheses 3 and 4.*** This research also found evidence to support the hypothesized relationships between hygiene and motivator factors and credibility. Both hygiene and motivator factors were significantly positively associated with credibility. The two-factor theory provides a theoretical basis for a direct influence of user expectations on credibility, acting in tangent with the MAIN model, The degree to which user expectations are satisfied is positively associated with perceptions of credibility. These results are consistent with literature suggesting that user perceptions of usability and aesthetics influence their evaluations of the website and its source (Cooke, 2005; Nielson, 1994; Sandvig & Bajwa, 2004). Satisfaction of user expectations conveys a positive message about the organization.

***Experimental research question 2.*** Although more visual attention was paid to some hyperlinks than others, there was no evidence that the attention was in any way associated with credibility judgments. Indeed, there was a significant difference between the two groups of participants' fixations on the hyperlinks About (accessible) and About Univ (exclusive). This study, as previously discussed, made an effort to reproduce an observed difference by substituting a generic identifier (Univ), thus, the hyperlink About Univ was featured on the exclusive prototype. Prior eye tracking observations would suggest that About Univ may attract more visual attention for a couple of reasons. The

mere visual complexity of being more than one word may draw attention, and the abbreviation Univ may be unusual enough to warrant a second glance. There was however, no evidence that certain types of hyperlinks were differentially associated with perceptions of credibility. This finding may be in part due to the lack of variance in the hyperlinks presented.

*Experimental research question 3.* Design features were shown to be associated with perceptions of credibility. This research found evidence of a positive relationship between gaze time on the primary image and source credibility positive goodwill and a negative relationship between time spent looking at the text box(es) and source credibility positive goodwill. The positive relationship between gaze time on the primary image and source credibility positive goodwill provides evidence that suggests that the visual imagery both attracts visual attention and has the potential to positively influence perceptions of the organization. This is consistent with research that assessed university web pages and concluded that visual imagery is an effective means of communicating “intangibles” (Vilnai-Yavetz & Tifferet, 2013). Images can allow organizations to symbolically convey information. This is particularly influential on first impressions, which often rely primarily on visual characteristics (Lindgaard, Fernandes, Dudek, & Brown, 2006).

The results also indicated a negative relationship between time spent looking at text box(es) and source credibility positive goodwill. This means that participants who spent more time looking at the text boxes regarded the source as less credible in terms of positive goodwill than participants who spent less time looking at the text boxes. This finding may be explained by two-factor theory and eye tracking observations. Eye

tracking research has revealed that familiar information is often skimmed over with relatively short gaze times and short or even no visual fixations (Rayner, 1998; Yang, & McConkie, 2001). It is likely that web page information that conforms to user expectations, and is thus likely to be associated with higher credibility, may be visually attended to for only a brief time.

*Experimental research question 4.* Longer gaze durations on hyperlinks were not associated with credibility ratings. If a hyperlink is a pleasant surprise, gaze duration may be longer and be an indication of enhanced satisfaction, which may be associated with higher credibility judgments. However, gaze duration may be extended because the hyperlink is unexpected and perhaps considered irrelevant, not useful, ambiguous and/or difficult to interpret. If for any of those reasons, longer gaze duration may be negatively associated with credibility. However, given the results of the content analysis that informed the prototype development, the hyperlinks were not anticipated to be unexpected. There was thus no relationship found between hyperlink gaze duration and credibility.

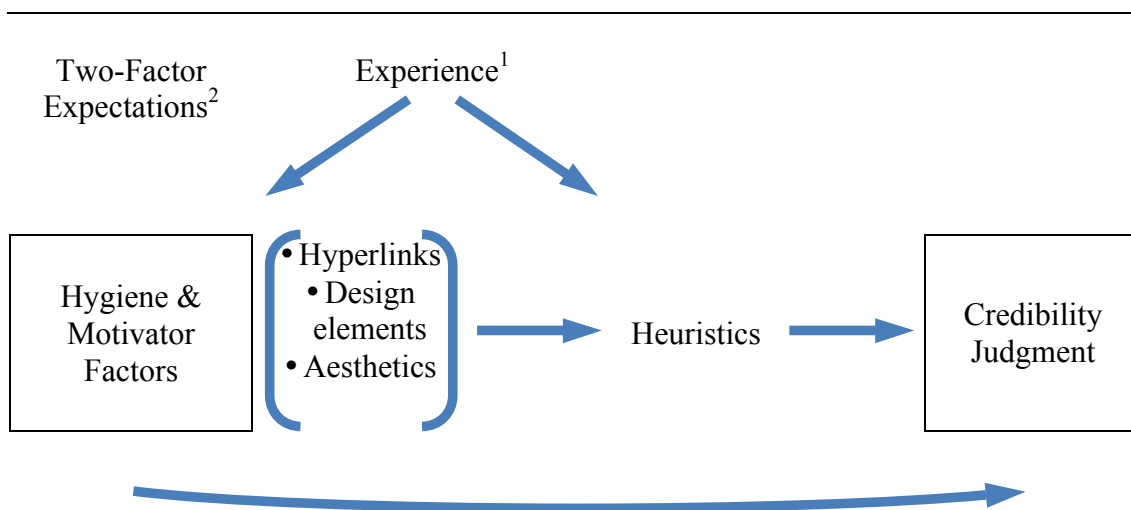
*Experimental research question 5.* The most frequent features of the webpage reported by participants as standing out in their memory were recollections about hyperlinks, organizational identifiers, and primary image. Long gaze durations were not, however, associated with those features. This finding is contrary to what is predicted by the eye-mind hypothesis, that what is visually attended to influences thought. The results nearest to significance were relative to recall of hyperlinks and primary image, significant at slightly greater than .10. There is thus no evidence to suggest that gaze duration was associated with thought listing recall items that stood out in the user's memory.

**Theoretical findings.** Prior observations indicate that first impressions rely upon peripheral cues and that the subsequent heuristic processing of those cues is influenced by user experience and expectations (Briggs et al., 2002; Lindgaard et al., 2006). This experiment confirmed the pivotal role of user expectations and experience in assessing credibility. The results are thus explained by two-factor theory. Support was found for the hypothesized positive relationships between hygiene and motivator factors and credibility. The two-factor theory provides a theoretical basis for a direct influence of user expectations on credibility. In addition, it can be surmised that user expectations influence the processes explained by the MAIN model, which focuses on the use of heuristics to cue unconscious processes that facilitate credibility judgments about online sources (see Figure 7). This adapted model is consistent with the findings reported in the Additional Analyses section of the Results chapter. The combination of hygiene, motivators, and university website experience predicts 55% of the variance in overall credibility. Based upon their expectations, users evaluate web features and design elements. Thus, hyperlinks and other technology affordances can be seen in terms of hygiene and motivator factors. When heuristically processed, the valence of the perceptions and subsequent evaluations can be influenced by how the affordances – how the features – compare to user expectations.

Hygiene factors may be elements pertaining to perceived usability, functionality, and attractiveness of the website based upon user expectations. The negative correlation between gaze duration on text boxes and credibility suggests that text boxes were heuristically processed hygiene factors. Their presence was expected and, once confirmed with a cursory glance, contributed favorably to credibility evaluation. Conversely, there is

evidence that the primary image was heuristically processed as a motivator factor. Motivator factors, if present, contribute positive user perceptions. On average, the primary image was attended to after users' gaze path explored the navigation bar and text

Figure 7. Adapting the Two-Factor Theory to Incorporate the MAIN Model



Notes: <sup>1</sup> Whether a heuristic is applied is influenced by two criteria: the extents to which a judgment rule is accessible and relevant, characteristics that are influenced by experience; <sup>2</sup> The two factors are **hygiene** and **motivator**.

boxes, presumably to confirm the presence of hygiene factors. Once attended to, the primary image was lingered upon, and gaze duration was positively correlated with credibility. Motivator factors contribute to a user's pleasurable experience, and increase the likelihood of a favorable overall evaluation. It is thus worthwhile for organizations to make an effort to anticipate and fulfill user expectations in order to convey a positive image.

Further, user experience also influences the heuristic processing of peripheral cues to inform first impressions (Briggs et al., 2002; Lindgaard et al., 2006). Heuristic processing is predicted by the extent to which it is accessible and relevant. This means that previous experience under similar circumstances increase the likelihood of heuristic processing. Indeed, this study found that Internet experience, experience with university websites in particular, was positively associated with credibility, consistent with what is known about the heuristic processes underlying the MAIN model. It is expected that experience also influences expectations.

Others have suggested that the first step in the judgment of online credibility relies on surface characteristics such as appearance and how the information is presented, rather than on more objective nominal cues (Wathen & Burkell, 2002). The findings of this study are consistent with that perspective. The participants who had longer gaze durations on the primary image attributed more credibility to the organization. The image was a stock photo of the outside corner of a building, looking up past windows and to the underside of a roof overhang and beyond to a blue sky dappled with wispy clouds. There are no tangible indicators or credibility present, but there is evidence that they influence users.

**Practical recommendations.** Although college recruitment is competitive, there is evidence that universities are not exploiting the full potential of their websites to market themselves to potential students (Carlos & Rodrigues, 2012; Gordon & Berhow, 2009). Further, website formal features may influence not just first impressions, but also subsequent information processing (Bellur & Sundar, 2014; Sundar, 2008). Thus, this study has practical implications. By adding further empirical information to

understanding user impressions of and reactions to technology features, website design decisions can be made systematically rather than intuitively. Specifically, this study found little variation in the hyperlinks used by accessible and exclusive universities. Thus, there was no statistically significant evidence that number or types of hyperlinks are associated with credibility. This study did, however, demonstrate that Internet experience, experience with university websites in particular, was positively associated with credibility judgments, including trust. Further, hygiene and motivator factors were significantly positively associated with measures of credibility, an observation that integrates the MAIN model with two-factor theory. This provides evidence that user experience and expectations play an important role in how website information is perceived and processed. By understanding the users of their websites, universities can thus cultivate a positive image by using design elements to better meet the expectations of those users.

### **Limitations**

The manipulation check failed to demonstrate that the website homepages were perceived as significantly different. There can thus be no confidence that any observed differences are related to the manipulation. Failure of the manipulation may have been partly due to the small size of the content analysis sample, a related limitation. This was an exploratory effort that examined a small sampling of organizations theorized to attract a broad yet similar cross section of users to their websites in search of information about and perhaps even impressions of the institutions. In retrospect, perhaps the sampling was too small and too similar. By sampling only Ohio universities, the range of variation may have been too restricted. Demographics for the 2015-2016 academic year indicate that



84.5% of the students recruited to attend accessible Ohio universities were Ohio residents, versus 42.4% of the students at exclusive Ohio universities (see Table 1). However, the percentage of Ohio residents attending exclusive Ohio universities ranges from 5-82%, substantially overlapping with that of accessible universities (70-95%). It is thus likely that both types of institutions would employ similar methods to target a similar pool of applicants, thereby providing too little variation to inform the development of prototypes capable producing statistically significant differences in perceptions.

Thus, there were no significant differences in number of hyperlinks, or their font style and size. Further, the prototypes featured no differences in terms of placement and dimensions of the navigation bar or the search features presented. Indeed, the largest source of variance between the samples that informed the prototypes was in terms of the size of the primary image. Therefore, a larger sample for the content analysis would be advantageous by potentially introducing more variation of design features and allow for the use of Pearson's Chi-square to analyze the statistical significance of the distributions.

Further, the experimental sample was a convenience sample of 76 undergraduate students from a Midwestern university. A larger sample may have enhanced the effect sizes, many of which were just below the threshold of significance despite a non-significant manipulation. A larger and more diverse demographic which includes the parents of potential students would also be more informative.

In terms of web design, the extent to which the organizations assessed employed a commercially available standard web design platform is not known. Use of a standardized template would also constrain the variation of the website homepages.

Stakeholders within the organizations may not have personally selected the features to best appeal to their target audience. However, whether the organization directly selects or defers some control to web design professionals, it is expected that design elements will have a tendency to converge on features that both appeal to the intended users and that prove to be effective with respect to the goals of the organization.

Another limitation is that, hyperlinks were not explored. This is thus, by no means an exhaustive assessment of the navigability or interaction qualities of the websites. It is, however, a good reflection of the first impression presented to new visitors to the site. As previously discussed, given the nature of the organizations, one can infer that every year will bring a new crop of students and their families searching for information and trying to determine what the institution may have to offer. Particularly under the stress of high cognitive load that might be expected during the college search process, it can be expected that heuristic processes are likely to guide much of the impression formation process. Thus, seemingly trivial visual features of the university's website homepage are of great importance in terms of managing first impressions. One would expect to see material that greater differentiates the institutions as one delves more deeply into the website.

A methodological limitation is that only one individual coded the content that informed the development of the prototypes. As such, there are no reliability figures. While having one coder may theoretically ensure consistency, there is always the potential that variations in attention and perception and issues such as personal bias may introduce both systematic and random error into the coding procedure. For future endeavors with larger samples, more than one coder should be used so that reliability can

be assessed. Alternatively, data could be coded using computer software, which has been shown to enhance reliability.

A final limitation is that this study has employed an implicit methodology. This study has not demonstrated how the hyperlinks are perceived or used. This assessment has simply surmised, by virtue of their presentation, that the inherent value of the features is tacitly acknowledged.

### **Future Directions**

There is much to be learned from better understanding the cognitive and heuristic processes that result from interactions with computer mediated presentations. Much of web design seems to rely on intuition and convention. The concept of affordances and the MAIN model can help to guide empirical explorations of the impact of visual design elements on website use and perceptions. As discussed in the limitations, a larger and more diverse sample of university website homepages would improve this line of investigation. By sampling only Ohio universities, the range of variation may have been too restricted. Demographics for the 2015-2016 academic year indicate that 84.5% of the students recruited to attend accessible Ohio universities were Ohio residents, versus 42.4% of the students at exclusive Ohio universities (see Table 1). However, the percentage of Ohio residents attending exclusive Ohio universities ranges from 5-82%, substantially overlapping with that of accessible universities (70-95%). It is thus likely that both types of institutions would employ similar methods to target a similar pool of applicants, thereby providing too little variation to inform the development of prototypes capable producing statistically significant differences in perceptions. In addition, use of a larger sample for the content analysis would be advantageous by introducing more

variation of design features that would allow for the use of Pearson's Chi-square to analyze the statistical significance of the distributions.

Indeed, a study that content analyzed the websites a sample of 100 educational institutions found greater variance (Hite & Railsback, 2010). The authors used a stratified random sample of the *2005 U.S. News and World Report List of Best Colleges & Universities* to assess homepages and admissions-related hyperlinks. The hyperlinks that they noted as the most frequently used were consistent with those found in this study. Their larger sample, however, provided statistical significance to less frequently presented hyperlinks, which suggests that a larger content analysis sample may have provided a greater source of variance to better differentiate the prototypes.

A larger sample of participants could enhance the statistical significance of the findings many of which were just below the threshold of significance despite a non-significant manipulation. The experimental sample was a convenience sample of 76 undergraduate students from a Midwestern university. A larger and more diverse demographic, including students, prospective students, and parents of prospective students could be investigated.

## **Conclusion**

Useful and functional features, such as hyperlinks, can help an organization to convey a positive image. Those features may also elicit heuristic responses that are outside of conscious awareness but help to reduce the complexity of cognitive tasks. By simplifying the mental processes, judgments can be made more quickly and efficiently (Fiske & Taylor, 2008). But these judgments may not always be accurate or as designers intended. It is therefore important for organizations and web designers to have some

understanding of the degree to which visual elements of design influence perceptions.

The concept of affordances, the MAIN model, and two-factor theory provide a theoretical framework for assessing how and why impressions are conveyed.

This study has provided practical insights. Overall, it confirms that design elements influence impressions and evaluations. Positive impressions result from conforming to user expectations in terms of usability and design. The site needs to appear to be usable and attractive. This information is not new. However, the two-factor theory can be used, integrated with the MAIN model, to gain insight into what users want and expect. As the web environment evolves, that target is perpetually moving. However, for an organization to fully recognize the capacity of its website to distinguish itself from the competition, it needs to understand the parameters. Novelty may pique interest, act as a motivator, provided that it is not too unusual, which may instead diminish perceptions of credibility.

The importance of visual imagery is also evident. The eye tracking data revealed that, on average, users first scanned the navigation bar, then the text boxes, and finally the primary image, where they then lingered. The positive relationship between gaze time on the primary image and source credibility positive goodwill provides evidence that visual imagery has the potential to positively influence perceptions of the organization. Visual imagery can be used to symbolically convey a positive impression of an organization, which can positively influence subsequent information processing.

Thus, this study makes practical contributions that can benefit all organizations that have a website, by investigating the cognitive and heuristic processes that can be elicited by technology affordances. It is important to remember that all web content

communicates on both technological and psychological levels, imparting a variety of information about the organization (Se-Jin, Wei-Na, Hyojin, & Stout, 2004). Empirical investigations such as this one enable a more informed approach to designing web interfaces that facilitate user interactions and make a positive impression.

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## **APPENDICES**

## APPENDIX A

### Sources of Content Analysis Data

Table A.1.1. Accessible Ohio Universities and Selection Criteria, 2015-2016

University (Abbreviation)	In-state Tuition & Fees	Undergraduate Enrollment	Acceptance Rate
Youngstown State University (YSU)	\$8,317	11,348	83.3%
Wright State University (Wright)	\$8,730	12,682	96.8%
University of Toledo (UToledo)	\$9,568	16,090	94.7%
Cleveland State University (CSU)	\$9,848	12,194	67.1%
Kent State University (Kent)	\$10,012	23,328	84.4%
Ohio State University (OSU)	\$10,037	44,741	53.0%
University of Akron (UAkron)	\$10,509	19,723	95.7%
Bowling Green State University (BGSU)	\$10,726	14,099	53.4%
University of Cincinnati (UC)	\$11,000	24,407	76.0%
Ohio University (Ohio)	\$11,548	23,571	74.3%
Used to Develop Coding Scheme:			
Miami University	\$14,287*	15,813	65.8%
Shawnee State University	\$7,364	4,114*	74.2%
Central State University	\$7,938	1,733*	37.7%*

Notes: Ten of Ohio's public universities meet all three selection criteria for accessibility: affordable (low tuition and fees, less than \$12,000; range \$8,317 to \$11,548), large enrollment (over 10,000; range 11,348 to 44,741), moderate to high acceptance rates (over 50%; range 53.0% to 96.8%). \* denotes criterion not within range

Table A.1.2. Exclusive Institutions and Selection Criteria, 2015-2016

University (Abbreviation)	In-state Tuition & Fees	Undergraduate Enrollment	Acceptance Rate
Oberlin College (Oberlin)	\$50,586	2,961	32.7%
Kenyon College (Kenyon)	\$49,140	1,662	25.1%
Denison University (Denison)	\$47,290	2,280	50.7%
College of Wooster (Wooster)	\$44,950	2,066	59.1%
Case Western Reserve U. (Case)	\$44,560	4,911	38.3%
Ohio Wesleyan U. (OWU)	\$43,230	1,734	74.3%
Xavier University (Xavier)	\$35,080	4,633	73.2%
Capital University (Capital)	\$32,830	2,742	73.0%
Hiram College (Hiram)	\$31,530	1,235	62.1%
University of Findlay (Findlay)	\$31,508	3,967	72.0%
Used to Develop Coding Scheme:			
University of Dayton	\$39,090	8,529*	59.0%
Wittenberg University	\$38,030	1,948	91.4%*
John Carroll University	\$37,180	3,125	82.9%*

Notes: Ten of Ohio's private universities meet all three selection criteria for exclusivity: expensive (high tuition and fees, over \$30,000; range \$31,508 to \$50,586), small enrollment (less than 5,000; range 1,235 to 4,911), low to moderate acceptance rates (under 75%; range 25.1% to 74.3%). \* denotes criterion not within range.

Table A.2.1. Web Addresses of Accessible Ohio University Website Homepages

University (Abbreviation used)	Web Address Accessed and Assessed
Bowling Green State University (BGSU)	<a href="http://www.bgsu.edu/">http://www.bgsu.edu/</a>
Cleveland State University (CSU)	<a href="http://www.csuohio.edu/">http://www.csuohio.edu/</a>
Kent State University (Kent)	<a href="http://www.kent.edu/">http://www.kent.edu/</a>
Ohio State University (OSU)	<a href="https://www.osu.edu/">https://www.osu.edu/</a>
Ohio University (Ohio)	<a href="https://www.ohio.edu/">https://www.ohio.edu/</a>
University of Akron (UAkron)	<a href="http://www.uakron.edu/">http://www.uakron.edu/</a>
University of Cincinnati (UC)	<a href="http://www.uc.edu/">http://www.uc.edu/</a>
University of Toledo (UToledo)	<a href="http://www.utoledo.edu/">http://www.utoledo.edu/</a>
Wright State University (Wright)	<a href="http://www.wright.edu/">http://www.wright.edu/</a>
Youngstown State University (YSU)	<a href="http://www.ysu.edu/">http://www.ysu.edu/</a>
Miami University (Miami)	<a href="http://www.miamioh.edu/">http://www.miamioh.edu/</a>
Shawnee State University (Shawnee)	<a href="http://www.shawnee.edu/">http://www.shawnee.edu/</a>
Central State University (Central State)	<a href="http://www.centralstate.edu/">http://www.centralstate.edu/</a>

Notes: Screen shots used for content analysis were retrieved 01/09/2016

Table A.2.2. Web Addresses of Exclusive Ohio University Website Homepages

University (Abbreviation used)	Web Address Accessed and Assessed
Capital University (Capital)	<a href="http://www.capital.edu/">http://www.capital.edu/</a>
Case Western Reserve U. (Case)	<a href="http://www.case.edu/">http://www.case.edu/</a>
College of Wooster (Wooster)	<a href="http://www.wooster.edu/">http://www.wooster.edu/</a>
Denison University (Denison)	<a href="http://denison.edu/">http://denison.edu/</a>
Hiram College (Hiram)	<a href="http://www.hiram.edu/">http://www.hiram.edu/</a>
Kenyon College (Kenyon)	<a href="http://www.kenyon.edu/">http://www.kenyon.edu/</a>
Oberlin College (Oberlin)	<a href="https://home.oberlin.edu/">https://home.oberlin.edu/</a>
Ohio Wesleyan U. (OWU)	<a href="https://www.owu.edu/">https://www.owu.edu/</a>
University of Findlay (Findlay)	<a href="https://www.findlay.edu/">https://www.findlay.edu/</a>
Xavier University (Xavier)	<a href="http://www.xavier.edu/">http://www.xavier.edu/</a>
University of Dayton (UDayton)	<a href="https://www.udayton.edu/">https://www.udayton.edu/</a>
Wittenberg University (Wittenberg)	<a href="http://www.wittenberg.edu/">http://www.wittenberg.edu/</a>
John Carroll University (JCU)	<a href="http://sites.jcu.edu/">http://sites.jcu.edu/</a>

Notes: Screen shots used for content analysis were retrieved 01/09/2016

## APPENDIX B

### Content Analysis Code Book

#### Coding Book

##### University Website Homepage Affordances and Structural Features

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Winter 2015-2016

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#### Research Questions:

- CARQ1:** What hyperlinks are featured on the website homepages?
- CARQ2:** Which hyperlinks are presented similarly by both accessible and exclusive universities?
- CARQ3:** Which hyperlinks are featured differently by accessible and exclusive universities?
- CARQ4:** What structural elements of web design are common to both accessible and exclusive university website homepages?
- CARQ5:** What structural elements differentiate accessible and exclusive university website homepages?

**Unit of Analysis:** Static images of website homepages. Hyperlinks are visual features of the site that will afford navigational and information seeking opportunities to site users. We specifically define hyperlinks as:

- A single word or a brief phrase
- May display a menu affording further selection, or may lead to a different page

- Prominently located on the navigation bar, typically a horizontal field featuring organizational identifiers, comprised of all or most of the top half of the website home page as it appears on the screen when first loaded.

**Source Material:**

University website homepages. Specifically, Ohio universities were sampled, and segmented into Accessible and Exclusive categories based on demographic information retrieved from <http://www.usnews.com> on 11/24/2015 (11.24.2015):

The specific criteria for highly accessible were:

- Affordability: tuition and fees less than \$12,000; range \$8,317 to \$11,548
- Large enrollment: over 10,000; range 11,348 to 44,741
- High acceptance rates: over 50%; range 53.0% to 96.8%

Source: [http://colleges.usnews.rankingsandreviews.com/best-colleges/search?name=&location=OH&enrollment-min=5250&enrollment-max=14000&tuition-min=5000&tuition-max=21875&acceptance-min=40&acceptance-max=90&major=&spp=25&page=1&sort=web\\_search\\_in\\_state\\_tuit2&sortdir=asc](http://colleges.usnews.rankingsandreviews.com/best-colleges/search?name=&location=OH&enrollment-min=5250&enrollment-max=14000&tuition-min=5000&tuition-max=21875&acceptance-min=40&acceptance-max=90&major=&spp=25&page=1&sort=web_search_in_state_tuit2&sortdir=asc;); retrieved 11/24/2015

The criteria for exclusive were:

- Expensive: high tuition and fees, over \$30,000; range \$31,508 to \$50,586
- Small enrollment: less than 5,000; range 1,235 to 4,911
- Low to moderate acceptance rates: under 75%; range 25.1% to 74.3%

Source: [http://colleges.usnews.rankingsandreviews.com/best-colleges/search?name=&location=OH&enrollment-min=0&enrollment-max=10500&tuition-min=21875&tuition-max=50000&acceptance-min=10&acceptance-max=80&major=&spp=25&page=1&sort=web\\_search\\_in\\_state\\_tuit2&sortdir=desc](http://colleges.usnews.rankingsandreviews.com/best-colleges/search?name=&location=OH&enrollment-min=0&enrollment-max=10500&tuition-min=21875&tuition-max=50000&acceptance-min=10&acceptance-max=80&major=&spp=25&page=1&sort=web_search_in_state_tuit2&sortdir=desc); retrieved 11/24/2015

Results were tabulated. The web address of each university's homepage was retrieved on Google.

Once accessed, university website homepages were captured with screen shots and saved in word documents

**Coding Procedures:**

Coded components include:

**Affordance Features:**

Hyperlink Categories (present or not present)

Hyperlink Categories (frequency count)

**Structural Features:**

Search Features

Organizational Identifiers

Text boxes (number present)

Prominence of Navigation bar (full screen width or not)

Prominence of Primary image (full screen width or not)

Dimensions of Navigation bar (width and height in inches)

Dimensions of Primary image (width and height in inches)

Font sizes of smallest and largest hyperlinks (recorded in terms of Calibri font size, based on height of the text)

Font size of the primary organizational identifier (recorded in terms of Calibri font size, based on height of the text)

**Preliminary Coding Rules and Definitions**

1) **First, code the case variables:**

<b>Variable</b>	<b>Definition/Label</b>	<b>Response Options</b>	<b>Rules &amp; Notes</b>
<i>Record</i>	University name	As indicated on University Websites Table	
<i>Coder</i>	Patti	All analyses were done by a single coder	
<i>Date</i>	Date the image was coded	Enter Date Format = 01.09.2016	



## Hyperlinks

Presence of Affordance Hyperlinks (coded 01.09.2016)

<b>Variable</b>	<b>Definition/Label</b>	<b>Response Options</b>	<b>Rules &amp; Notes</b>
<i>Affordance Hyperlink (AH)</i>		Is the hyperlink label present?	Indicate if the hyperlink label or a noted variation is or is not present
<i>AHAbout (AH1)</i>	About	0 = no; 1 = yes	May include 'discover,' university history, protocols (policies, procedures, HR, PR, job postings, administration & finance); accessibility; disability services
<i>AHAcad (AH2)</i>	Academics	0 = no; 1 = yes	May include academic affairs, branch campuses, e-learning, colleges; departments; programs
<i>AHAdmin (AH3)</i>	Administration	0 = no; 1 = yes	May include office of the president, accreditation, strategic plan
<i>AHAdmit (AH4)</i>	Admission	0 = no; 1 = yes	May include admission homepage, apply, financial aid, visit, connect, accepted
<i>AHApply (AH5)</i>	Apply	0 = no; 1 = yes	Apply, apply now
<i>AHAthlet (AH6)</i>	Athletics	0 = no; 1 = yes	Athletics and recreation
<i>AHCampus (AH7)</i>	Campus Life	0 = no; 1 = yes	Student Life; may include student services, career, counseling, disability, health services; students (campus life, student development); student success (advising, services, assistance); career resources (job openings, career development)
<i>AHDirect (AH8)</i>	Directory	0 = no; 1 = yes	Finding things on campus; Campus directory; offices & departments, A-Z (office/dept/school directory)

Presence of Affordance Hyperlinks, continued (coded 01.09.2016)

<b>Variable</b>	<b>Definition/Label</b>	<b>Response Options</b>	<b>Rules &amp; Notes</b>
<i>Affordance Hyperlink (AH)</i>		Is the hyperlink label present?	Indicate if the hyperlink label or a noted variation is or is not present
<i>AHInfo (AH9)</i>	Information	0 = no; 1 = yes	May include information for future students; information for current students; information for and about faculty and staff; ask
<i>AHAlum (AH10)</i>	Alumni	0 = no; 1 = yes	Information for alumni may that may also include giving & outreach
<i>AHFam (AH11)</i>	Parents & Families	0 = no; 1 = yes	Information for parents & families
<i>AHVis (AH12)</i>	Visitors	0 = no; 1 = yes	Information for visitors and prospective students; may include maps and directions
<i>AHInside (AH13)</i>	Inside _	0 = no; 1 = yes	May include news and events; calendar; student services/resources; arts & culture
<i>AHResearch (AH14)</i>	Research/Libraries	0 = no; 1 = yes	
<i>AHMy (AH15)</i>	Student Services	0 = no; 1 = yes	Student services may include current and accepted student electronic resources such as my_ ; campus email; emergency system
<i>AHGive (AH16)</i>	Giving	0 = no; 1 = yes	Giving and support; donating
<i>AHHome (AH17)</i>	Homepage link	0 = no; 1 = yes	Textual link to the homepage

Frequency Counts of Affordance Hyperlinks (coded 01.09.2016)

<b>Variable</b>	<b>Definition/Label</b>	<b>Response Options</b>	<b>Rules &amp; Notes</b>
<i>Affordance Hyperlink Counts (AH#)</i>		Indicate how many times the hyperlink or a noted variation is featured	
<i>AH1#</i>	About#	0 = none; if present, count frequency of occurrence	May include 'discover,' university history, protocols (policies, procedures, HR, PR, job postings, administration & finance); accessibility; disability services
<i>AH2#</i>	Academics#	0 = none; if present, count frequency of occurrence	May include academic affairs, branch campuses, e-learning, colleges; departments; programs
<i>AH3#</i>	Administration#	0 = none; if present, count frequency of occurrence	May include office of the president, accreditation, strategic plan
<i>AH4#</i>	Admission#	0 = none; if present, count frequency of occurrence	May include admission homepage, apply, financial aid, visit, connect, accepted
<i>AH5#</i>	Apply#	0 = none; if present, count frequency of occurrence	Apply, apply now
<i>AH6#</i>	Athletics#	0 = none; if present, count frequency of occurrence	Athletics and recreation

Frequency Counts of Affordance Hyperlinks, continued (coded 01.09.2016)

<b>Variable</b>	<b>Definition/Label</b>	<b>Response Options</b>	<b>Rules &amp; Notes</b>
<i>Affordance Hyperlink Counts (AH#)</i>		Indicate how many times the hyperlink or a noted variation is featured	
<i>AH7#</i>	Campus Life#	0 = none; if present, count frequency of occurrence	Student Life; may include student services, career, counseling, disability, health services; students (campus life, student development); student success (advising, services, assistance); career resources (job openings, career development)
<i>AH8#</i>	Directory#	0 = none; if present, count frequency of occurrence	Finding things on campus; Campus directory; offices & departments, A-Z (office/dept/school directory)
<i>AH9#</i>	Information#	0 = none; if present, count frequency of occurrence	May include information for future students; information for current students; information for and about faculty and staff; ask
<i>AH10#</i>	Alumni#	0 = none; if present, count frequency of occurrence	Information for alumni may that may also include giving & outreach
<i>AH11#</i>	Parents & Families#	0 = none; if present, count frequency of occurrence	Information for parents & families
<i>AH12#</i>	Visitors#	0 = none; if present, count frequency of occurrence	Information for visitors and prospective students; may include maps and directions

Frequency Counts of Affordance Hyperlinks, continued (coded 01.09.2016)

<b>Variable</b>	<b>Definition/Label</b>	<b>Response Options</b>	<b>Rules &amp; Notes</b>
<i>Affordance Hyperlink Counts (AH#)</i>		Indicate how many times the hyperlink or a noted variation is featured	
<i>AH13#</i>	Inside_#	0 = none; if present, count frequency of occurrence	May include news and events; calendar; student services/resources; arts & culture
<i>AH14#</i>	Research/Libraries#	0 = none; if present, count frequency of occurrence	
<i>AH15#</i>	Student Services#	0 = none; if present, count frequency of occurrence	Student services may include current and accepted student electronic resources such as my_ ; campus email; emergency system
<i>AH16#</i>	Giving#	0 = none; if present, count frequency of occurrence	Giving and support; donating
<i>AH17#</i>	Homepage link#	0 = none; if present, count frequency of occurrence	Textual link to the homepage

## Structural Features

Presence of Search Features (coded 01.09.2016)

Variable	Definition/Label	Response Options	Rules & Notes
<i>Visible Search Features (S)</i>			Allow words or phrases to be typed to aid in locating information
<i>S1</i>	The word "Search"	0 = not present; 1 = present	
<i>S2</i>	Search icon	0 = not present; 1 = present	Magnifying glass
<i>S3</i>	Other word prompts	0 = not present; 1 = present	
<i>S4</i>	Box	0 = not present; 1 = present	A text box
<i>S5</i>	Prominence	0 = not present or difficult to see; 1 = clearly visible	Difficult to see includes low contrast, small size, &/or peripheral location not on NB. Clearly visible includes high contrast, large size, &/or central location on NB

Presence of Organizational Identifiers (coded 01.09.2016)

<b>Variable</b>	<b>Definition/Label</b>	<b>Response Options</b>	<b>Rules &amp; Notes</b>
<i>Organizational Identifiers (OID)</i>			Identifiers that provide awareness of the organization
<i>OID1</i>	Organization name	0 = not present; 1 = present	Full name or abbreviation
<i>OID2</i>	Logo	0 = not present; 1 = present	A graphic design or symbol
<i>OID3</i>	Hyperlink	0 = not present; 1 = present	At least one hyperlink features a name, abbreviation, nickname, or term associated with the university
<i>OID4</i>	Slogan	0 = not present; 1 = present	A phrase or sentence
<i>OID5</i>	Year established	0 = not present; 1 = present	
<i>OID6</i>	Location	0 = not present; 1 = present	Specific reference to the city (perhaps city, state). Do not count as location usage that is included in the name of the organization.

Textboxes (coded 01.09.2016)

<b>Variable</b>	<b>Definition/Label</b>	<b>Response Options</b>	<b>Rules &amp; Notes</b>
<i>Number of Textboxes</i>			
<i>Text</i>	Text boxes	0 = none; if present, count frequency of occurrence	Count the number of groupings of five or more words; do not count text present directly on photos

Full Screen Width (coded 01.09.2016)

<b>Variable</b>	<b>Definition/Label</b>	<b>Response Options</b>	<b>Rules &amp; Notes</b>
<i>Full Screen Width (FSW)</i>			Structural feature is the full width of the computer screen
<i>FSWnb</i>	NB	0 = no; 1 = yes	Does the navigation bar extend from one side of the screen to the other?
<i>FSWphoto</i>	Photo	0 = no; 1 = yes	Does the primary photo (largest, most central & prominent image) extend from one side of the screen to the other?



Structural Feature Measurements (coded 01.09.2016)

<b>Variable</b>	<b>Definition/Label</b>	<b>Response Options</b>	<b>Rules &amp; Notes</b>
<i>Feature Size</i>			
<i>Screenw</i>	Screen width	Width, in inches	Measure the width of the computer screen being used to view the website homepages, in mm
<i>Screenh</i>	Screen height	Height, in inches	Measure the height of the computer screen being used to view the website homepages, in mm
<i>NBw</i>	Width of the Navigation Bar	Width, in inches	Measure the width of the navigation bar
<i>NBh</i>	Height of the Navigation Bar	Height, in inches	Measure the height of the navigation bar
<i>Photow</i>	Width of the primary photo	Width, in inches	Measure the width of the primary photo (the largest, most central & prominent image)
<i>Photoh</i>	Height of the primary photo	Height, in inches	Measure the height of the primary photo (the largest, most central & prominent image)

Font Size Measurements (coded 01.11.2016)

<b>Variable</b>	<b>Definition/Label</b>	<b>Response Options</b>	<b>Rules &amp; Notes</b>
<i>Font Size (Font)</i>			To standardize measures, the height of the text is compared to the height of Calibri font, and the size of the Calibri font recorded.
<i>Fontsm</i>	Size of the smallest hyperlink text, relative to Calibri font size	Font size of comparable Calibri text	
<i>Fontlg</i>	Size of the largest hyperlink text, relative to Calibri font size	Font size of comparable Calibri text	
<i>FontOID</i>	Size of the primary organizational identifier text, relative to Calibri font size	Font size of comparable Calibri text	

## APPENDIX C

### Content Analysis Results

Frequency Counts of Affordance Hyperlinks, Accessible University Homepages																	
	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	H15	H16	H17
YSU	1	1	0	1	0	1	1	0	1	0	0	0	1	0	2	0	0
BGSU	1	1	0	1	0	1	1	0	1	1	0	0	0	1	2	1	0
CSU	1	1	1	1	1	0	0	1	0	1	0	1	0	1	1	1	0
UC	1	1	0	1	0	1	1	1	1	0	0	1	0	2	1	1	1
UAkron	2	1	0	1	0	0	1	1	0	0	0	2	1	2	1	1	0
Kent	1	2	0	1	0	1	1	2	1	0	0	1	1	1	1	0	0
UToledo	1	1	0	1	1	1	1	1	2	1	0	1	0	1	1	1	0
OSU	0	1	1	0	0	1	0	1	2	1	0	2	1	1	2	1	1
Wright	1	1	0	1	0	1	1	2	0	1	0	1	1	2	2	0	0
Ohio	1	3	0	1	1	1	1	0	3	1	1	1	2	1	0	1	0

Frequency Counts of Affordance Hyperlinks, Exclusive University Homepages																	
	H1	H2	H3	H4	H5	H6	H7	H8	H9	H10	H11	H12	H13	H14	H15	H16	H17
Oberlin	0	2	0	0	1	0	0	0	1	0	0	1	2	0	0	1	0
Kenyon	2	2	0	1	0	1	1	1	2	1	1	1	2	0	0	1	0
Denison	0	1	0	1	0	1	1	1	0	1	0	0	1	1	1	1	0
Wooster	1	1	0	1	0	1	1	1	2	1	1	0	2	0	0	1	0
Case	1	1	0	1	0	1	1	0	4	1	0	0	0	1	0	1	0
OWU	1	1	0	1	1	1	1	0	2	1	1	1	2	0	0	1	0
Xavier	2	1	0	1	1	1	1	1	3	1	0	2	0	0	0	1	0
Capital	0	2	0	0	1	0	0	0	2	0	0	1	0	0	1	0	0
Hiram	1	1	0	1	0	1	1	0	0	1	1	0	0	0	1	1	0
Findlay	0	1	0	0	0	1	1	0	2	1	1	0	1	0	0	1	0

## **APPENDIX D**

### **Website Homepage Prototypes**

Shown on the following pages

Figure D1. Accessible University Website Homepage Prototype



Figure D2. Exclusive University Website Homepage Prototype



## APPENDIX E

### Informed Consent Form



## Cleveland State University

College of Liberal Arts & Social Sciences  
*School of Communication*

Dear Participant,

I understand that people from the Cleveland State University are trying to figure out what people think and how they feel about university websites. I am willing to help with the study. I understand that I can help by viewing websites, having the computer observe my eye motions, and answer questions. This study will take place in MU 236 and should take about 30 minutes of my time.

I am taking part because I want to. I have been told that I can stop at any time, and I do not have to answer any questions if I do not want to. No one will know my answers except the two researchers.

All the files from this study will be kept private. In any report we may publish, we will not include any information that will make it possible to identify you or any other participants. Research records will be kept in a locked file. All electronic information will be coded and secured using a password protected file.

There are no risks to you if you choice to complete this study.

If your instructor has offered extra credit for participation, you will have the choice to enter your name and the name of your instructor. If you choose to provide your name, it will be kept separate from any other information you share with us.

For more information about this research study, please contact Dr. Cheryl Bracken at (216) 687-4512. You may also contact Patricia DellaCorte at [p.dellacorte@vikes.csuohio.edu](mailto:p.dellacorte@vikes.csuohio.edu).

If you have any questions about your rights as a research participant you may contact the Cleveland State University Institutional Review Board at (216) 687-3630.

**I am 18 years or older and I agree to participate in this research study. I have read the information provided above. I understand that by signing this form, I am agreeing to participate in this research study.**

Signature: \_\_\_\_\_

Name: \_\_\_\_\_ (Please Print)

Date: \_\_\_\_\_

*Mailing Address:* 2121 Euclid Avenue, MU 233 \* Cleveland, Ohio 44115-2214  
*Campus Location:* Music & Communication Center, Room 233 \* 2001 Euclid Avenue \* Cleveland, Ohio 44115  
<http://www.csuohio.edu/com> \* (216) 687-4630 \* Fax: (216) 687-5435

## APPENDIX F

### Questionnaire

You will be asked questions about the website that you just viewed. Please make an effort to answer accurately so that your opinions will help researchers to better understand how students perceive university websites.

### Thought Listing

Recall:

Please write down at least one feature of the webpage that you just viewed that stands out in your memory.

Thought:

Please write down at least one thing that you thought or felt while viewing the webpage.

### Manipulation Check

For each item, please indicate which best describes your impression of the webpage that you just viewed (1 = strongly disagree to 7 = strongly agree; Higher score means private university)

- Man1 The homepage is from a private university
- Man2 The homepage is from a public university (R)
- Man3 The homepage does not seem representative of a private university. (R)
- Man4 The homepage does not seem representative of a public university.



**Does It Matter If They're Different?** Even if differences are perceived, they may not influence credibility judgments if the differences perceived are dismissed or considered unimportant.

Please indicate which best describes your response to the following statements about universities. 1 = strongly disagree to 7 = strongly agree. (Higher score indicates preference for private universities)

- Matter1 I think that private universities offer a better education than public universities.
- Matter2 I think that private universities do not offer a better education than public universities. (R)
- Matter3 Other people think that private universities offer a better education than public universities.
- Matter4 Other people think that private universities do not offer a better education than public universities. (R)

### **Internet Experience**

Next are some questions about your Internet experience. Please indicate your response on each of the following scales:

- IntExp1 How often do you use the Internet? 1 = I never use the Internet; 4 = I use the Internet an average amount; 7 = I use the Internet very often
- IntExp2 How much experience do you have using the Internet? 1 = No experience at all; 4 = Average experience; 7 = A great deal of experience

- IntExp3 What is your level of expertise using the Internet? 1 = I am not at all expert; 4 = I have average expertise; 7 = I am completely expert
- IntExp4 How familiar are you with the variety and amount of information available on the Internet? 1 = Not at all familiar; 4 = Average familiarity; 7 = Extremely familiar
- IntExp5 Please indicate your access to the Internet. 1 = It is extremely difficult for me to access the Internet; 4 = I have average access to the Internet; 7 = It is extremely easy for me to access the Internet

### **Internet Usage**

In this section, 27 different Internet activities are listed, with frequency of usage ranging from never to every day. Please select the one response which best describes how often you use the Internet for each of the following:

1 = never; 2 = once a year or less; 3 = less than once a month; 4 = at least once a month; 5 = at least once a week; 6 = more than once a week; 7 = every day

- IU1 I use the Internet to look for information about a product or service.
- IU2 I use the Internet to purchase a product or service online.
- IU3 I use the Internet for social networking.
- IU4 I use the Internet for blogging.
- IU5 I use the Internet to send and/or receive email.
- IU6 I use the Internet to chat.
- IU7 I use the Internet for instant messaging.
- IU8 I use the Internet for online telephone calls.

- IU9 I use the Internet to participate in discussion groups.
- IU10 I use the Internet to play online games.
- IU11 I use the Internet for online betting and/or gambling.
- IU12 I use the Internet to participate in virtual worlds.
- IU13 I use the Internet to listen to music.
- IU14 I use the Internet to watch videos.
- IU15 I use the Internet to watch TV.
- IU16 I use the Internet to download music.
- IU17 I use the Internet to download videos.
- IU18 I use the Internet to look for travel information.
- IU19 I use the Internet to make travel reservations.
- IU20 I use the Internet to look for information about local activities.
- IU21 I use the Internet for paying bills online.
- IU22 I use the Internet for online banking services.
- IU23 I use the Internet for monitoring retirement or investment accounts.
- IU24 I use the Internet for filing taxes.
- IU25 I use the Internet to access online health information.
- IU26 I use the Internet to access sites with adult content.
- IU27 I use the Internet for online dating.

### **University Websites**

Please indicate which best describes your response to the following statements.

1 = Strongly disagree; 4 = Neither agree nor disagree; 7 = Strongly agree

- UWeb1 I researched CSU online before deciding to attend.
- UWeb2 My decision to attend CSU was influenced by online research.
- UWeb3 I researched other universities online before deciding to attend CSU.
- UWeb4 My decision to attend CSU was influenced by the CSU website.
- UWeb5 I relied on the Internet for information to decide what university to attend.
- UWeb6 The Internet is useful for selecting a university.

### **Hygiene Factors**

On the following pages please indicate which response best describes your impression of the webpage that you just viewed.

1 = Strongly disagree; 4 = Neither agree nor disagree; 7 = Strongly agree

- Hy1 The features needed to interact with the website were included on the homepage.
- Hy2 At least one feature that I expected to be present was not included on the homepage.
- Hy3 The appearance of the homepage made a good impression.
- Hy4 Using the website would be straightforward.
- Hy5 Using the website would be difficult.

### **Motivator Factors**

1 = Strongly disagree; 4 = Neither agree nor disagree; 7 = Strongly agree

- Mot1 Useful features that I did not expect were included on the homepage.
- Mot2 Irrelevant information was minimized.

- Mot3 The links were useful.
- Mot4 The appearance of the homepage was pleasing.

### **Website Quality**

On the scales provided, please indicate your perceptions of the quality of the website that you viewed.

1 = Strongly disagree; 4 = Neither agree nor disagree; 7 = Strongly agree

- WQ1 The website appears easy to use.
- WQ2 It appears to be easy to navigate within the website.
- WQ3 The website does not appear easy to use. (R)
- WQ4 I would trust this website.
- WQ5 I have confidence in this website.
- WQ6 I would not trust this website. (R)
- WQ7 I find the website to be attractive.
- WQ8 The website has a clean and simple presentation.
- WQ9 I do not find the website to be attractive. (R)

### **Source Credibility**

1 = Strongly disagree; 4 = Neither agree nor disagree; 7 = Strongly agree

#### **Source Credibility: Competence Subscale**

What was your impression of the organization whose website you just viewed? Please indicate the extent to which you agree or disagree with the following statements about the source of the website:

- SCC1 The source of the website is unintelligent. (R)
- SCC2 The source of the website is trained.
- SCC3 The source of the website is expert.
- SCC4 The source of the website is uninformed. (R)
- SCC5 The source of the website is competent.
- SCC6 The source of the website is stupid. (R)

### **Source Credibility: Goodwill Subscale**

From the impression that you got from the website that you viewed, rate each of the following statements:

SCG1 I believe the source of the webpage cares about me.

SCG2 I believe the source of the webpage has my interests at heart.

SCG3 I believe the source of the webpage is self-centered. (R)

SCG4 I believe the source of the webpage is concerned with me.

SCG5 I believe the source of the webpage is insensitive. (R)

SCG6 I believe the source of the webpage is not understanding. (R)

### **Source Credibility: Trust Subscale**

- For the following items, please indicate your opinion about the source of the webpage.
- SCT1 The source of the webpage is honest.
- SCT2 The source of the webpage is untrustworthy. (R)
- SCT3 The source of the webpage is honorable.

- SCT4 The source of the webpage is moral.
- SCT5 The source of the webpage is unethical. (R)
- SCT6 The source of the webpage is phony. (R)

### **Source Media Credibility**

Now please indicate your impression of the information on the website.

1 = Strongly disagree; 4 = Neither agree nor disagree; 7 = Strongly agree

- SMC1 I found the information on the website to be believable.
- SMC2 I found the information on the website to be accurate.
- SMC3 I found the information on the website to be trustworthy.
- SMC4 I found the information on the website to be biased.
- SMC5 I found the information on the website to be complete.

### **Demographics**

You're almost done! In the final section, please tell us a little about yourself.

BioSex Which term do you use to describe yourself?

1=male; 2=female; 3=other

Age What was your age on your last birthday, in years?

Race Which do you identify as:

1=White, not Hispanic or Latino; 2=Hispanic or Latino; 3=Black or African American;  
4=Asian or Asian American; 5=Middle Eastern; 6=Native American or Alaskan Native;  
7=Hawaiian or Pacific Islander; 8=Other

CSU year What is your current standing at Cleveland State University (CSU)?

1=freshman; 2=sophomore; 3=junior; 4=senior; 5=graduate student; 6=other

(If) You selected "other" for your current standing at CSU. Please explain.

CSUsem Including this semester, for how many semesters have you been a student at  
CSU?

HSweb Did your high school have a website?

1=yes; 2=no

CC Did you attend a community college prior to CSU?

1=yes; 2=no

CorU Did you attend a college or university prior to CSU?

1=yes; 2=no

Thank you for participating!



**APPENDIX G**

**Source Credibility Goodwill Principal Components Factor Analysis with Varimax**

**Rotation and Cronbach's Alpha**

**Cronbach's Alpha: Source Credibility Goodwill Subscale**

**Reliability Statistics: Source Credibility Goodwill Subscale**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
<b>.596</b>	.593	6

**Item-Total Statistics: Source Credibility, Goodwill Subscale**

I believe the source of the webpage...

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
SCG1 cares about me.	20.8553	16.045	.485	.632	.478
SCG2 has my interests at heart.	20.8289	17.157	.400	.635	.520
SCG3R is self-centered. R	20.1974	21.307	.067	.417	<b>.655</b>
SCG4 is concerned with me.	20.9211	16.980	.432	.434	.506
SCG5R is insensitive. R	19.8158	19.432	.294	.399	.566
SCG6R is not understanding. R	19.8158	18.419	.330	.205	.552

**Factor Analysis: Source Credibility Goodwill Subscale**

**Descriptive Statistics: Source Credibility, Goodwill Subscale**

From the impression that you got from the website, rate the statements “I believe the source of the webpage...”

	<i>M</i>	<i>SD</i>	<i>N</i>
SCG1 “... cares about me.”	3.63	1.522	76
SCG2 “... has my interests at heart.”	3.66	1.484	76
SCG3 “... is self-centered.”	3.71	1.441	76
SCG4 “... is concerned with me.”	3.57	1.455	76
SCG5 “... is insensitive.”	3.33	1.258	76
SCG6 “... is not understanding.”	3.33	1.389	76

<b>Pearson Correlation: Source Credibility Goodwill Subscale Items</b>						
	SCG1	SCG2	SCG3	SCG4	SCG5	SCG6
SCG1	1.000	.764	.206	.613	-.026	-.131
SCG2	.764	1.000	.259	.622	.090	-.055
SCG3	.206	.259	1.000	.143	.583	.348
SCG4	.613	.622	.143	1.000	-.001	-.093
SCG5	-.026	.090	.583	-.001	1.000	.395
SCG6	-.131	-.055	.348	-.093	.395	1.000

**Factor Analysis: Source Credibility Goodwill Subscale, continued**

**Communalities: Source Credibility, Goodwill**

From the impression that you got from the website, rate the statements “I believe the source of the webpage...”

	Initial	Extraction
SCG1 “... cares about me.”	1.000	.816
SCG2 “... has my interests at heart.”	1.000	.819
SCG3 “... is self-centered.”	1.000	.721
SCG4 “... is concerned with me.”	1.000	.688
SCG5 “... is insensitive.”	1.000	.721
SCG6 “... is not understanding.”	1.000	.544

Extraction Method: Principal Component Analysis.

**Rotated Component Matrix<sup>a</sup>**

	Component	
	1	2
SCG1 “... cares about me.”	<b>.903</b>	-.021
SCG2 “... has my interests at heart.”	<b>.900</b>	.097
SCG3 “... is self-centered.”	.261	.808
SCG4 “... is concerned with me.”	<b>.829</b>	-.025
SCG5 “... is insensitive.”	.012	.849
SCG6 “... is not understanding.”	-.178	.716

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

**Cronbach's Alpha: Source Credibility Goodwill Positive Subscale**

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.858	.857	3

**Item Statistics**

I believe the source of the webpage ...

	<i>M</i>	<i>SD</i>	<i>N</i>
SCG1 cares about me.	3.63	1.522	76
SCG2 has my interests at heart.	3.66	1.484	76
SCG4 is concerned with me.	3.57	1.455	76

**Item-Total Statistics**

I believe the source of the webpage ...

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
SCG1 cares about me.	7.22	7.003	.766	.615	.767
SCG2 has my interests at heart.	7.20	7.147	.774	.622	.760
SCG4 is concerned with me.	7.29	7.968	.658	.433	.866

**Cronbach's Alpha: Source Credibility Goodwill Negative Subscale**

**Reliability Statistics**

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.700	.704	3

**Item Statistics**

I believe the source of the webpage ...

	<i>M</i>	<i>SD</i>	<i>N</i>
SCG3R is self-centered. R	4.29	1.441	76
SCG5R is insensitive. R	4.67	1.258	76
SCG6R is not understanding. R	4.67	1.389	76

**Item-Total Statistics**

I believe the source of the webpage ...

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
SCG3R is self-centered. R	9.3421	4.895	.550	.356	.564
SCG5R is insensitive. R	8.9605	5.398	.597	.382	.516
SCG6R is not understanding. R	8.9605	5.772	.415	.177	.732

## APPENDIX H

### CITI Certification

#### COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM) COURSEWORK REQUIREMENTS REPORT\*

\* NOTE: Scores on this Requirements Report reflect quiz completions at the time all requirements for the course were met. See list below for details. See separate Transcript Report for more recent quiz scores, including those on optional (supplemental) course elements.

- **Name:** Patricia DellaCorte (ID: 3836432)
- **Email:** p.dellacorte@vikes.csuohio.edu
- **Institution Affiliation:** Cleveland State University (ID: 698)
- **Phone:** 216-875-9753
  
- **Curriculum Group:** Human Research
- **Course Learner Group:** Social & Behavioral Research Investigators
- **Stage:** Stage 2 - Refresher Course
  
- **Report ID:** 16755346
- **Completion Date:** 09/29/2015
- **Expiration Date:** 09/29/2017
- **Minimum Passing:** 80
- **Reported Score\*:** 100

REQUIRED AND ELECTIVE MODULES ONLY	DATE COMPLETED
SBE Refresher 1 – Defining Research with Human Subjects (ID: 15029)	09/29/15
SBE Refresher 1 – Privacy and Confidentiality (ID: 15035)	09/29/15
SBE Refresher 1 – Assessing Risk (ID: 15034)	09/29/15
SBE Refresher 1 – Research with Children (ID: 15036)	09/29/15
SBE Refresher 1 – International Research (ID: 15028)	09/29/15
Biomed Refresher 1 - Instructions (ID: 960)	09/29/15
SBE Refresher 1 – History and Ethical Principles (ID: 936)	09/29/15
SBE Refresher 1 – Federal Regulations for Protecting Research Subjects (ID: 937)	09/29/15
SBE Refresher 1 – Informed Consent (ID: 938)	09/29/15
SBE Refresher 1 – Research with Prisoners (ID: 939)	09/29/15
SBE Refresher 1 – Research in Educational Settings (ID: 940)	09/29/15
SBE Refresher 1 – Instructions (ID: 943)	09/29/15

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

CITI Program  
Email: [citiprogram@miami.edu](mailto:citiprogram@miami.edu)  
Phone: 305-243-7970  
Web: <https://www.citiprogram.org>

**COLLABORATIVE INSTITUTIONAL TRAINING INITIATIVE (CITI PROGRAM)  
COURSEWORK TRANSCRIPT REPORT\*\***

\*\* NOTE: Scores on this Transcript Report reflect the most current quiz completions, including quizzes on optional (supplemental) elements of the course. See list below for details. See separate Requirements Report for the reported scores at the time all requirements for the course were met.

- **Name:** Patricia DellaCorte (ID: 3636432)
- **Email:** p.dellacorte@vikes.csuohio.edu
- **Institution Affiliation:** Cleveland State University (ID: 688)
- **Phone:** 216-875-9753
  
- **Curriculum Group:** Human Research
- **Course Learner Group:** Social & Behavioral Research Investigators
- **Stage:** Stage 2 - Refresher Course
  
- **Report ID:** 16755346
- **Report Date:** 09/29/2015
- **Current Score\*\*:** 100

REQUIRED, ELECTIVE, AND SUPPLEMENTAL MODULES	MOST RECENT
SBE Refresher 1 – History and Ethical Principles (ID: 936)	09/29/15
Biomed Refresher 1 - Instructions (ID: 900)	09/29/15
SBE Refresher 1 – Federal Regulations for Protecting Research Subjects (ID: 937)	09/29/15
SBE Refresher 1 – Informed Consent (ID: 938)	09/29/15
SBE Refresher 1 – Research with Prisoners (ID: 939)	09/29/15
SBE Refresher 1 – Research in Educational Settings (ID: 940)	09/29/15
SBE Refresher 1 – Instructions (ID: 943)	09/29/15
SBE Refresher 1 – International Research (ID: 15028)	09/29/15
SBE Refresher 1 – Defining Research with Human Subjects (ID: 15029)	09/29/15
SBE Refresher 1 – Assessing Risk (ID: 15034)	09/29/15
SBE Refresher 1 – Privacy and Confidentiality (ID: 15035)	09/29/15
SBE Refresher 1 – Research with Children (ID: 15036)	09/29/15

For this Report to be valid, the learner identified above must have had a valid affiliation with the CITI Program subscribing institution identified above or have been a paid Independent Learner.

**CITI Program**  
 Email: [citiprogram@miami.edu](mailto:citiprogram@miami.edu)  
 Phone: 305-243-7970  
 Web: <https://www.citiprogram.org>

Collaborative Institutional  
 Training Initiative  
 at the University of Miami

## APPENDIX I

### IRB Approval

**From:** cayuseirb@csuohio.edu [mailto:cayuseirb@csuohio.edu]  
**Sent:** Friday, January 22, 2016 8:21 AM  
**To:** Cheryl M Bracken  
**Cc:** Cayuse IRB  
**Subject:** IRB-FY2016-167 - Initial: IRB Approval

Jan 22, 2016 8:21 AM EST

Dear Cheryl Bracken,

**RE: IRB-FY2016-167**

**UNIVERSITY HOMEPAGE AFFORDANCES: THE INFLUENCE OF  
HYPERLINKS ON PERCEPTIONS OF SOURCE CREDIBILITY**

The IRB has reviewed and approved your application for the above named project, under the category noted below. Approval for use of human subjects in this research is for a one-year period as noted below. If your study extends beyond this approval period, *you must contact this office to initiate an annual review of this research.*

**Approval Category: Expedited, Category 4,7**  
**Approval Date: Jan 21, 2016**  
**Expiration Date: Jan 19, 2017**

By accepting this decision, you agree to notify the IRB of: (1) any additions to or changes in procedures for your study that modify the subjects' risk in any way; and (2) any events that affect that safety or well-being of subjects. Notify the IRB of any revisions to the protocol, including the addition of researchers, prior to implementation.

It has indeed been both a privilege and a pleasure to be of assistance to you through this review process. We want to take this opportunity to wish you the very best of luck in your investigative endeavor!

Thank you for your efforts to maintain compliance with the federal regulations for the protection of human subjects. Please let me know if you have any questions.

Sincerely,

Mary Jane Karpinski  
IRB Analyst  
Cleveland State University  
Sponsored Programs and Research Services  
(216) 687-3624  
[m.karpinski2@csuohio.edu](mailto:m.karpinski2@csuohio.edu)