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The Role of Motivation in Assessing Website Credibility: Insights from Eye Tracking

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Abstract

A This study examines the role of a website user's motivation in forming her assessment of the website's credibility. We applied a dual processing model of website credibility assessment, which posits that motivation determines the extent to which users will critically evaluate website information and later form their credibility impressions of the website. In this paper we examine the relationship between motivation and cognitive processes and how those influence assessments of website credibility. We conducted an experiment using eye tracking technology to gauge the gaze behaviors of website users. We found that motivated users examined information content of the website more tentatively, while non-motivated users evaluated design features of the website more closely. Non-motivated users were inclined to assess the website as more credible. Findings from our study offer strong support for the dual processing model of website credibility.

Keywords: Dual-processing model, eye tracking, website credibility, experiment

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1. Introduction

In recent years, the growth of social media and the increased penetration of mobile and wearable technologies has made information ubiquitous and allowed businesses to constantly communicate with their targeted customers (Junglas and Watson, 2006). Subsequently, consumers are constantly exposed to "push" marketing by the platforms they use (e.g., Facebook, Instagram) to explore websites they mostly have not encountered before or were not even aware of their existence. Although the push marketing strategies can provide users with a more personalized experience, the user's encounters with unfamiliar websites/online sellers brought the issues of website credibility to a new level.

In the Human Computer Interaction (HCI) context, credibility is the perceived believability of information and is based largely on the trustworthiness of the source (Tseng and Fogg, 1999). Mandatory lockdowns brought on by global pandemics, such as the recent spread of COVID-19, raise the importance of e-commerce in supporting people's needs for everyday items. The impressions that the users form regarding a website are important as they determine whether a user would buy a service or goods. In the world of e-commerce, the credibility of the website is often the basis for consumers determining whether they will purchase from the site (Everard and Galletta, 2005). Researchers have looked into the attributes of the websites to determine users' assessment of the website (e.g., Cyr et al., 2006; George, Mirsadikov, et al., 2016; Wells et al., 2011).

Generally, people face a number of challenges when assessing the credibility of a website. On one hand, people evaluate different website elements (e.g., presence of contact information, easy navigation, design, updated content, etc.) when assessing the credibility of online information (Metzger, 2007). On the other hand, people have limited information-processing capabilities (Newell and Simon, 1972) and tend to focus on a smaller set of indicators, applying heuristics. While applying a heuristic information processing mode helps minimize a user's cognitive effort, there are circumstances when the information seeker should engage in a more deliberate and systematic evaluation of online information, as when they encounter an unfamiliar website or need to find accurate information. Motivation of the users, hence, impacts the way they evaluate information and form the credibility assessment. While prior research suggests that information seeker's characteristics (i.e., expert vs novice) influence the credibility assessment of information online, relatively little is known about the effect of motivation on credibility assessment (Lucassen et al., 2013; Metzger, 2007). Earlier studies found that motivation of website users led to increased concerns about the credibility of the source, however, these studies did not investigate whether more credibility concerns were associated with different credibility assessments of the websites (e.g., Hilligoss and Rieh, 2008; Rieh and Belkin, 1998).

Metzger (2007) proposed a model of Web site credibility assessment where a website user analyzes the semantic and surface information on the website applying a dual-processing approach. The model suggests that depending on their motivation, users look to different aspects of information on a website. Highly motivated users are likely to apply systematic, or relatively closer examination process, while less motivated users will resort to heuristic, or peripheral evaluation of the website features. Metzger's model suggests a clear role of motivation in determining which of the two information evaluation processes would be invoked. The more motivated the person is, the more likely it is they apply systematic/central evaluation.

To investigate the viability of the theory, we propose (i) to explore the relationship between user motivation, cognitive processes, and credibility assessment about websites and (ii) to examine what users actually look at to assess website credibility. Prior studies relied on self-reported responses of the participants in determining the credibility of website information. Whereas self-reports by participants constitute a valuable source of data, presence of more objective data should highlight website details affecting the credibility assessment. Prior research has demonstrated that the actual behavior of participants may differ from self-reports (e.g., Dimoka, 2011; Eysenbach and Köhler, 2002; Flanagin and Metzger, 2007). Thus, we propose an exploratory study addressing the following research questions:

1) What role does user motivation play in how they process information online?

2) How do mental processes affect how users assess a websites' credibility?

To investigate these research questions and to fill in the methodological gaps, we employ eye tracking technology.

While prior research has looked into the relationship between credibility assessments and a motivation to use certain media (e.g., Johnson and Kaye, 2010; Johnson and Kaye, 2015; Stavrositu and Sundar, 2008), the specific links between users' motivation and cognitive evaluation processes determining website credibility judgment have not been investigated. Thus, we have limited insight into the cognitive processes associated with a website credibility evaluation. We propose employing eye tracking technology to explore the impact of motivation on invoking the cognitive processes when assessing the credibility of an unfamiliar website. This methodology has been used extensively in human-computer interaction research and provides certain advantages over other traditional methods such as the ability to record users' objective and accurate real-time eye movements and to analyze users' gaze movements both quantitatively and qualitatively. Moreover, eye tracking provides an unobtrusive examination of how the mental processing of website elements takes place and affords insight into the content of information processing (Duchowski, 2007; Rayner, 1998). In this study, we propose examining gaze data as a quantitative technique for exploring the mental processes (i.e., central and peripheral) used to evaluate website credibility.

Despite the model's promise for researching website credibility, no research work, to the best of our knowledge, has attempted to empirically test it. The research community has called for studies to better understand how user motivation impacts credibility evaluations (e.g., Fogg et al., 2003; Metzger and Flanagin, 2013). Moreover, IS scholars have called for research measuring actual behavior of users instead of relying on the perceived measures of behavior and self-reports (Williams et al., 2017). The goal of this study is partly to respond to these calls.

Next, we briefly review the literature related to website credibility and eye tracking technology. We propose a research model and hypotheses. Then, we describe the research methodology and present our analysis. We conclude by discussing our findings and implications for research and practice.

2. Literature Review

2.1 Online Credibility

Credibility is generally defined as perceived believability of information (Tseng and Fogg, 1999). In the realm of e-commerce, credibility was consistently found to be an important factor affecting customers' purchase decisions (Everard and Galletta, 2005). While multiple studies examined the downstream effect of website credibility (e.g., Wells et al., 2011), some researchers looked into the antecedents to credibility (e.g., George, Giordano, et al., 2016; George, Mirsadikov, et al., 2016). A number of theoretical models have been proposed to help understand how information seekers form credibility assessments.

Metzer's (2007) Dual Processing Model of Credibility Assessment is based on the main idea of dual processing theories such as Elaboration Likelihood Model (Petty and Cacioppo, 1981) and Heuristic-Systematic Model (Chaiken, 1980), which suggest that information processing follows two routes (1) central and (2) peripheral, depending on the motivation and the ability of the user to scrutinize information (Figure 1).

Adopting the dual processing models to the web credibility assessment context, Metzger suggests that information seekers' motivation and ability determine to what degree users will evaluate the credibility of a website. More experienced or trained, as well as highly motivated, users are expected to scrutinize online information in more depth than novice or less motivated users. The model also posits two main routes of cognitive rigor when assessing online information: the central or systematic processing route involves deeper and more thorough cognitive effort to evaluate information, while the peripheral processing route is associated with minimal cognitive load and relies mostly on heuristics. Whether the systemic processing route or the heuristic route will be applied depends on the user's motivation and ability (Figure 1).

Fogg proposed prominence-interpretation theory (PIT) to explain how users of a web site come to assess its credibility. The theory suggests that two things happen when a website user evaluates it: the user notices some website elements (prominence) and later assigns meanings to those elements (interpretation) (Fogg, 2003). PIT suggests that a website user will not attend to all website elements, and any elements not noticed by the user will not contribute to the credibility assessment of the website. Fogg defines prominence as "the likelihood that a Web site element will be noticed." He suggests that a number of factors affect prominence, and the user motivation is the most important of those. Interpretation refers to persons' judgment about the element they notice.

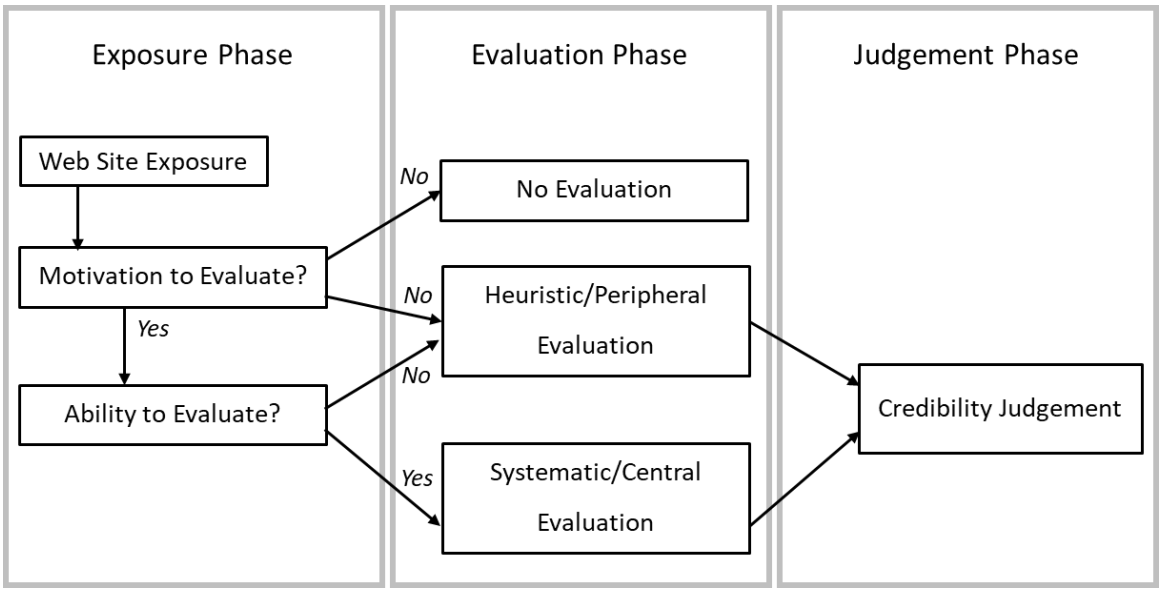

Figure 1. Elements of a Dual Processing Model of Credibility Assessment as Depicted in Metzger (2007)

2.2 Eye Tracking

It was postulated that self-reporting behaviors by participants may not be an accurate measure of actual behaviors (Eysenbach and Köhler, 2002; Williams et al., 2017). Remarkable advances in eye-tracking technology made it possible to more accurately detect what people see, compared to what they say they see. Eye-tracking has been used to study human behaviors for almost a century and has contributed to our understanding of activities such as reading, problem solving, search strategies, and overall processing of visual stimuli (Poole and Ball, 2006). The most commonly used metrics of eye-tracking studies are fixations, or spatially stable gazes, in which the subject's eyes are focused on a particular area, and saccades, or rapid eye movements that occur between fixations (Duchowski, 2007; Jacob and Karn, 2003). Gaze fixations are associated with visual attention and cognitive processes associated with a visual display (Bojko, 2013). A user who cognitively evaluates a particular website element exhibits higher gaze fixation frequency or longer gaze fixation duration associated with that element. As such, eye tracking metrics serve as a proxy to cognitive processes associated with the evaluation of the elements observed.

A clear advantage of eye tracking technology over traditional methods is that it offers accurate, timely, and unobtrusive means into what users actually focus on, without having to rely on self-reports. Schiessl and colleagues conducted four studies to compare objective eye-tracking data to conventional methods for assessing the allocation of visual attention of users (Schiessl et al., 2003). They found that self-reported questionnaires administered following the studies did not portray the participant behaviors accurately and could have led to improper conclusions if not compared with the results from eye-tracking data. They concluded that attentional processes do not solely depend on conscious control. Those processes are "often controlled beyond subjects' awareness, are therefore not reportable or are simply too fast to be analyzed by mouse movements" (p. 2). In another similar study, a group of researchers tracked the visual attention of individuals making simulated food-purchasing decisions to examine how self-reported viewing of nutrition facts labels related to objectively measured viewing obtained from eye-tracking technology (Graham and Jeffery, 2011). A post-task survey assessed self-reported nutrition information viewing, health behaviors, and demographics. Participants reported viewing nutrition label information at a higher rate than they actually did.

In information systems (IS) research, numerous studies have been conducted employing eye tracking. Prior work has examined the effect of social nudges on steering toward a desired action outcome (Kretzer and Maedche, 2018), how users assess banner ads online (Burke et al., 2005), how individuals process information and perform tasks of various complexity (Buettner et al., 2018), how human images affect website appeal and trust (Cyr et al., 2009), and in many other domains. In the light of the benefits and insight that NeuroIS tools offer, a group of prominent IS researchers urged scholars to employ tools such as eye tracking to measure complex cognitive processes (Dimoka et al., 2012). Given the noninvasive nature of the technology, along with decreasing costs of operation, the eye tracking method promises many interesting insights in IS

research.

2.3 Research Model

The Dual Processing Model of Credibility Assessment proposes that "… users look to different aspects of Web-based information to assess its credibility depending on their motivation…" (Metzger, 2007, p. 2088). This assertion is similar to Fogg's "prominence" in PIT (Fogg, 2003), which suggests that user motivation will determine what aspects of a website will get noticed by the user. Less motivated users are expected to assess a website's credibility by focusing on web design elements and graphics. Highly motivated users, on the other hand, are expected to assess beyond website surface features and dwell on semantic content, inspecting source information such as contact information, physical address, third party endorsements or recommendations. The variance in visual evaluation of the website elements can be captured by the eye tracking technology in terms of attention to specific website elements.

The model suggests that what and how users look at the website elements is a function of their motivation and the mental processes they utilize at any given time. Consequently, what they notice and evaluate on a website should affect their assessment of the website's credibility. A third-party's certificate of a site's security, for example, should elicit more confidence, whereas outdated information or broken links should raise concerns about the site's credibility. In a large-scale study of over 2500 participants, researchers found the link between what users noticed and how they formed their credibility assessments (Fogg et al., 2003). Forty six percent of responses suggested that design and look of a website influenced their credibility judgment. In a different study, participants mentioned physical store location and hours of operation as the most frequent element in assessing a website's credibility (George et al., 2016). This variance in focusing on visual elements of websites may potentially stem from variance in motivations and cognitive processes. The model does not propose a clear directionality from the cognitive processes to credibility judgment, and it makes no assertions whether systematic processing would lead to more or less favorable credibility assessments. We propose, however, that websites inspected under a lower scrutiny (i.e., peripheral processing) are expected, in general, to be evaluated as more credible. This line of reasoning comes from deception detection research, which suggests that people have a "truth" bias (Street and Masip, 2015). In daily interactions, people tend to believe what the other party communicates, unless they have reasons to be suspicious. Similarly, in the context of web credibility assessment, unless the confidence threshold of website users is breached, they tend to perceive the source as credible. Based on the propositions of the dual processing model, we propose our study hypotheses:

Hypothesis 1: Visual foci of website users will vary as a result of motivation, such that: Gaze fixations on website surface elements (e.g., design and graphics) will be higher for less motivated users, while gaze fixations on semantic elements (e.g., product details, company location, contact information, payment details) will be higher for motivated users.

Hypothesis 2: Central and heuristic cognitive processing routes should lead to variance in credibility assessment, such that users applying heuristic processing should assess a website as more credible.

In this study, we test the effect of user motivation, while controlling for other variables such as a user's ability or the underlying task. Experimental designs with fewer treatment factors allow for better investigation of the causal relationship (Dennis and Valacich, 2001). We hence propose a working research model, which examines the effect of motivation on cognitive evaluation processes and the subsequent effect of cognitive processes on the credibility judgment (Figure 2).

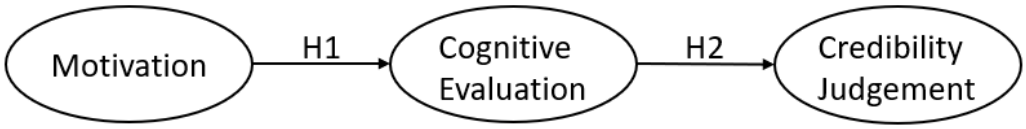

Figure 2. Working Research Model

3. Research Methods

3.1 The study

To test the causal relationship between the factors in the model and to test our hypotheses, we conducted a between-subjects experimental design. Before running the main study, we ran a pilot test with graduate students. The pilot study suggested whether the participants had sufficient understanding of the tasks, whether the treatment factor was effective, and the experimental procedure worked as designed.

We collected data at a Neuro lab at a large Midwestern university, using an eye-tracking system. We recruited thirty undergraduates in this study. Similar sample sizes are common for research work employing eye tracking technology because of the nature of collecting and interpreting eye tracker data (e.g., Cyr et al., 2009; Djamasbi et al., 2011; Yetgin et al., 2015). Half of the participants were randomly assigned to a treatment group and the other half to a control group. We used a scavenger hunt for a task, which was assigned to both groups. Participants were presented with the same commercial website of a small coffee and tea brewery business. This business offers a wide selection of gourmet coffee and tea, imported from various parts of the world. The business also offers catering services and barista classes at its multiple locations. A small-scale business with no name recognition was chosen to avoid brand recognition effect (Grewal et al., 1998). The scavenger hunt task involved locating multiple bits of information spread out across multiple webpages. Some tasks included searching for specific product details and is similar to the situation when a customer would search for a product online (e.g., finding price of a specific blend of tea, locating specific details about the product, etc.). Questions on the scavenger hunt varied in difficulty: some could be accessed with relative ease, whereas other questions required multiple clicks on website pages and thorough browsing. Participants in the treatment (motivation) group were promised a performance-based incentive (an additional $10 on top of their base participation compensation), while those in the control group were not. Monetary incentives to motivate participants in lab experiments are a common approach (Vrij, 2008).

To collect eye gazing behavior of the participants, we used an SMI RED 250 eye-tracking device, which is integrated to a 22'' monitor. Each participant was seated in front of the monitor and her/his gaze was calibrated and validated before the start of the experiment. Participants in the treatment group were reminded multiple times of the performance-based incentive. The participants first completed a practice task to make sure they were comfortable with using the equipment and understood the task. Next, they were allowed to start the main task.

The gaze behavior of the participants responding to the scavenger hunt tasks (i.e., browsing behavior) was captured and recorded by the eye tracker. They were not constrained on time, and on average it took around forty minutes to complete each study session. At the end of the experimental session, each participant was paid $20, whether they were in the motivation manipulation group or not, and regardless of how they performed on the experimental task. We asked the participants to assess the website's credibility on a 7-Likert scale. We also asked them whether anything on the website was confusing or unclear, and all of them indicated that nothing on the website was unclear. Next, they were debriefed and the experiment's purpose was explained. Last, we asked them not to discuss the details of the experiment with anyone until the study was over.

3.2 Measures

The cognitive processes are operationalized through the fixation metrics on target areas we defined. Central processing, based on the model, is associated with longer fixations on the information content of the website, while peripheral processing is associated with longer fixations on the design and graphics of the website. To measure cognitive processes, we used the gaze fixations of the participants, measured in milliseconds, on the specific website elements. Gaze dwell fixations on specific target areas are regularly used to gauge cognitive processes (Cook et al., 2012; Djamasbi, 2014; Rayner, 1998; Rayner et al., 2012). Longer fixation durations indicate higher level of attention and increased cognitive processing (Duchowski, 2007). We assigned areas of interests (AOIs) on website elements to quantitatively compare and contrast gaze fixations across different treatment groups. Delimiting specific AOIs enclosing perceptual elements is a common approach for data analysis (Djamasbi, 2014). To evaluate cognitive processes on the design and graphic elements of the website, we delimited website parts associated with its graphics. Specifically, we created separate AOIs for the website's logo, product pictures, and non-product associated photos (e.g., people at the barista course, nature scenery allegedly included to signal freshness of the products, etc.). We also created AOIs for the website parts associated with more detailed information. Specifically, we delimited text parts about general business information (e.g., company's mission, history, and "about us"

section), company contact information (i.e., address, phone numbers, and hours of operation), detailed product description including price, and payment information. In sum, we identified 7 discrete elements of the website (AOIs) which we planned to use in our analyses. Fixation duration was measured in milliseconds each time the gaze entered the AOIs. We transformed the data using square root transformation as the data was highly skewed.

We also measured the dependent variable, users' assessment of the website's perceived credibility, which they selected on a 7-point Likert scale, ranging from "very low credibility" to "very high credibility." The independent variable, user motivation, was coded as a discrete variable (0 and 1). We also measured the accuracy of the participants' responses to the given questions to determine whether our manipulation worked. We assigned different weighing scores based on the difficulty of the task. We also gauged how many web pages the participants observed when performing the task. We used the number of web pages as a control variable as it could affect fixation metrics: the more pages they open, the higher should be the fixation duration on AOIs. To control the effect of the number of pages opened from the experimental treatment, motivation, we treated it as a covariate.

4. Analysis and Results

A one-way ANCOVA was conducted to determine the main effect of the experimental manipulation. There was a significant effect of the treatment variable (motivation) on the performance measure ($F(1, 27) = 6.27$, $p=0.019$) controlling for the effect of the number of web pages they opened ($F(1, 27)=10.50$, $p=0.003$). Pairwise contrasts of the mean differences revealed that the motivated group outperformed the control group (mean difference= 4.51, 95% CI (.82, 8.21)). Hence, the experimental manipulation had its intended effect.

To test Hypothesis 1, a one-way ANCOVA was conducted to determine a statistically significant difference between motivated and non-motivated website users on cognitive processes, controlling for the number of opened web pages. Assumptions for independence of the covariate and treatment effect and homogeneity of regression slopes were met. Tables 1 and 2 show the estimates of marginal means and the tests of between-subjects effects, respectively.

Table 1. Estimated Marginal Means

Cognitive process	Fixation duration on DV	Motivation	Mean	Std. Error
Systematic/central evaluation	Product description	Non-motivated	114.7	7.6
		Motivated	145.3	7.6
	Payment details	Non-motivated	18.4	1.5
		Motivated	27.2	1.5
	Contact information	Non-motivated	69.9	4.0
		Motivated	85.6	4.0
	Business information	Non-motivated	260.9	12.4
		Motivated	301.3	12.4
Heuristic/peripheral evaluation	Company logo	Non-motivated	110.3	4.2
		Motivated	59.9	4.2
	Product pictures	Non-motivated	198.1	8.4
		Motivated	141.4	8.4
	Other pictures	Non-motivated	94.1	4.1
		Motivated	71.2	4.1

As predicted, motivated users tended to fixate longer on and examine information content, while non-motivated users seemed to process longer on the website's design and graphics. The tests of between-subjects effects were all statistically significant and in the predicted direction. We found support for Hypothesis 1.

Table 2. Tests of Between-Subjects Effects

Cognitive process	Fixation duration on DV	F	df	df (error)	sig	Eta sq.
Systematic/central evaluation	Product description	7.79	1	27	0.010	0.22
	Payment details	15.62	1	27	<.001	0.37
	Contact information	7.47	1	27	0.011	0.22
	Business information	5.17	1	27	0.031	0.16
Heuristic/peripheral evaluation	Company logo	68.83	1	27	<.001	0.72
	Product pictures	22.19	1	27	<.001	0.45
	Other pictures	15.44	1	27	<.001	0.36

To test Hypothesis 2, we ran a regression model. Because the total number of observations is relatively low compared to the number of predictor variables, we grouped predictor variables based on their type. Specifically, we combined AOIs for elements related to design elements - (i.e., those areas likely to be processed heuristically such as logo, product pictures and other non-product pictures) and combined AOIs for elements associated with information content of the website (i.e., areas likely to be processed systematically such as product description, payment details, contact, and business information). Regression results are shown in Table 3.

Table 3. Regression Analysis Results

Constant	.620 (2.046)
Systematic/Central Evaluation	-.007* (.004)
Heuristic/Peripheral Evaluation	.026*** (.006)
R-squared	.48
No. observations	30

Standard errors are reported in parentheses.
***p-value ≤ 0.01, ** p-value ≤ 0.05, * p-value ≤ 0.10

The results of the regression indicated the two predictors explained 48% of the variance (R^2=.48, $F(2,27)$=12.63, p<.001). The analysis suggests that systematic processing of website information did not significantly predict website credibility assessments (β=-.007, $t(30)$=-1.71, p=.099), however heuristic evaluation of the website elements did significantly predict users' credibility assessment (β=-.026, $t(30)$=-4.18, p<.001). We found partial support for H2.

5. Discussion

We began this paper with observations about how users may come across unfamiliar websites and the need to understand how they form their assessments of those websites. Mandatory lockdowns, such as those brought in by COVID-19 are likely to increase the reliance of users on e-commerce. We noted that research that investigates the role of motivation in assessing website credibility is scant and posed two research questions:

1) What role does user motivation play in how they process information online?
2) How do the mental processes affect how users assess the websites' credibility?

Using the Dual Processing Model of Website credibility assessment as the basis for our research, we conducted a study

using eye-tracking technology to address our research questions. We put forward two hypotheses and found support for both. We tested the effect of user motivation on evaluation processes, which were operationalized through gaze fixation duration on the website elements. We also tested the effect of underlying cognitive processes on the overall credibility assessment of the website.

Regarding RQ1, we found that participants evaluated website elements differently based on whether they were motivated or not. All participants noticed the elements we chose as areas of interest, but how they focused on those elements varied significantly (H1). Participants in the control group (i.e., non-motivated users) tended to fixate their gaze longer on the design and graphics elements of the website. Peripheral information processing was operationalized through the fixation duration on the design and graphic features of the website. As suggested by Table 2, motivation type explained the most variance (Eta sq. = .72) for assessing a company logo. Our study results suggest that non-motivated users were more inclined to evaluate the website using a peripheral cognitive process and focus on design features of the website, which is evidenced by longer fixations on the logo, product pictures, and other pictures. On the other hand, motivated users tended to go beyond the surface characteristics of the website and examine the site's information content. Our findings support the Dual Processing Model of Website credibility assessment's proposition that users look to different aspects of web elements, depending on their motivation for seeking information.

Regarding RQ2, we found that different modes of website information processing affected the credibility assessment of the website. As predicted, participants employing heuristic cognitive processes evaluated the website as more credible. Prior research suggests that website elements featuring graphics with human images, especially with facial features, induce users to perceive a website as more appealing and as more trustworthy (Cyr et al., 2009). Moreover, design elements, such as a logo, can communicate traits of credibility and trigger positive credibility assessments about the website (Lowry et al., 2014). As noted earlier, the most noticed feature of the evaluated websites was "design look," which was reported by 46% of around 2600 participants who were asked to judge website credibility (Fogg et al., 2003). A systematic evaluation of the website content, however, did not predict credibility assessments. When processing information more carefully, the same content may trigger different interpretations. For example, when asked to judge deception, the same cues noticed may lead to different assessments (Vrij, 2008). Some may interpret a quick response as an indicator of honesty, while others may perceive it as a rehearsed response, and hence a hint of deception. Similarly, website users assessing credibility will not necessarily interpret a commonly observed object in the same way. While one user may interpret a very professional-looking website as a sign of expertise and prestige and hence credibility, another user might see traits of corporate slickness and misrepresentation and hence as signs of very little credibility.

5.1 Implications

These results have important implications for research as they support Metzger's (2007) Dual Processing Model of Website credibility assessment. While dual processing models of information processing (i.e., Elaboration likelihood model and Heuristic-systematic model) have been extensively examined in the context of persuasion, no study, to the best of our knowledge, has attempted to empirically validate Metzger's model in the context of website credibility assessment. We employed eye tracking technology to capture gaze behavior of users accurately and objectively while they assessed the website and were able to unobtrusively tap into their cognitive processes as they examined different elements of the website. Findings from our study complement existing research with rich insights afforded by the reliable data, which are otherwise difficult if not impossible to obtain through self-reported data. Given our findings, we expect that investigating the entire model would help extend its utility and use. The model could be potentially corroborated by using fMRI technology to visually examine the images of the brain activated when evaluating a website.

Our research has practical implications, as well. Findings from our study suggest that users evaluate website elements differently depending on their motivation levels. Hence, graphics and design features, as well as quality content of the website, play an important purpose in impression formation, especially of new users. As such, web designers should be careful with introducing graphical elements that are unnatural or unexpected, as non-motivated users will be inclined to make a hasty impression of the website and leave it. Similarly, motivated users will evaluate information content of the website with greater scrutiny, and therefore information architects must ensure the accuracy and timeliness characteristics of information present on the website. Users exploring the website for the first time evaluate the website logo for signs of expertise and trustworthiness and extrapolate their impressions to the entire website's assessment. As such, a great deal of importance must be paid to design and placement of the company logo on the website.

5.2 Limitations

As would be expected, this study is not void of limitations. First, we recruited US college students for our study. While the experimental task is relevant to this group, people in other age demographics and other ethnic groups might display different web browsing patterns (Djamasbi et al., 2011), and as such, our findings should be treated with caution when generalized to the broader population. Second, we used a computer monitor to track users' web browsing behavior. Eye gaze data generated by other technology such as smartphones and tablets may display different gaze behavior metrics. Third, an inherent limitation of this study is the small sample size. Although similar sample sizes are common for studies employing eye tracking technology, a larger sample size is expected to offer a more stringent test of the relationships. Next, in running our experiment we asked participants to perform a specialized search task, and as such, generalization to groups performing different tasks (e.g., searching news, shopping online, leisure browsing, researching a critical health condition, etc.) should be treated with caution. Last, we did not investigate the impact of users' ability to test the dual processing model in its entirety. While the gap between experts and non-experts is shrinking in the web browsing domain, future research could investigate the impact of expertise on the cognitive processes and the overall website's credibility assessment.

6. Conclusions

Much has been studied about the importance of website usability. However, a website that scores high in usability (e.g., navigation, fast website, accessible from different devices, and others) can still have credibility issues. Credibility is an important construct in the context of e-commerce. Understanding the factors that influence its assessment has implications for both research and practice. Prior research has called for investigating the role of user motivation on forming credibility judgments about a website. Applying a dual processing model of website credibility and employing an eye tracking methodology, we examined the impact of motivation on the cognitive processes and were able to construct specific links between those processes and the credibility assessment of a website. This affords us a deeper and nuanced insight into the cognitive processes associated with website credibility evaluation. Our tests of the theoretical model help us understand its durability as a theory and its potential usefulness for the study of e-commerce, deceptive communication, and beyond. For practitioners, findings from our study will contribute to better understanding the visual elements that users attune to when assessing websites for small business owners. Investigation of credibility assessment of websites does not stop at just e-commerce but can be extended for any other activity that relies on websites – information gathering, communication, cloud computing, e-learning, and others.

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