

# Is that information from a credible source? On discriminating internet domain names

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## Abstract

Web users must rely on their own judgment to determine the validity and reliability of website information. The present research examined internet trust by evaluating student and non-student participant's beliefs about the credibility of information based on web domain names and whether participants could distinguish between the domain names of organizations that were actual or fictitious. Results indicated that participants had difficulty discriminating between actual and fictitious internet domain names. Potential implications regarding website credibility are discussed and possible interventions are described.

*Keywords: Internet, credibility, trust, names, WWW, website*

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## 1. Introduction

More and more people are using the rapidly-expanding internet (WWW) to perform research, purchase goods, and conduct other activities [1]. 'The good and the bad' is that the internet enables users to access considerable amounts of information and that anyone can put anything on the internet, with some exceptions such as child pornography and government and industrial secrets. Anyone that has a registered domain name and minimal web development skills can post a website, credible or not. Unlike peer-reviewed and other verified materials, a substantial portion of the "facts" on the web have not been reviewed extensively for accuracy, and in some cases, may be false, deceptive, and misleading. Web users must rely on their own judgment to determine the validity and reliability of website information.

A number of website characteristics can affect one's trust and perception of credibility of a given site.

Recent research has suggested that the "design look" of a website is the most important indication of credibility [2]. It has also been suggested that another related aspect of websites affecting credibility beliefs is the layout or format of the website [3].

Previous research [4] on Internet credibility has examined perceptions of trustworthiness of several iconic "seals of approval" commonly found on websites (e.g., the VeriSign seal) as well as several categorical domain-name suffixes (e.g., .com, .org). Judgments of trust for several fictitious seals were rated as high as or higher than actual seals. In addition, participants based some of their judgments of trustworthiness on the domain-name suffix, with .edu and .gov rated higher than .com and .net.

The present research extends previous research on internet trust by examining participants' beliefs about the credibility of information based on names of organizations and their associated web domain names. In half, the organizations (and domain address) were

real, and in the other half, they were fictitious. The major focus was whether participants would evaluate actual and fictitious organizations (and corresponding web domain addresses) differently with regard to the amount of trust they would have of the information on their website.

## 2. Method

### 2.1. Participants

A total of 186 individuals participated (101 females and 85 males), 97 were non-students and 89 were university students. The student participants ( $M = 21.6$ ,  $SD = 3.1$ , ranging 18 to 34 years) were recruited from Introductory Psychology courses and received class credit for their participation. The non-students ( $M = 40.6$  years,  $SD = 15.2$ , ranging 19 to 81 years) were recruited from the Raleigh-Durham area in central North Carolina through a variety of methods such as newspaper advertisements and announcements at local flea markets.

In addition another group of participants ( $N = 13$ ) from the same participant pool described above rated the same list of items on familiarity.

### 2.2. Stimuli

There were 16 domain types. They were selected to represent a wide range of organizations that provide informational materials (e.g., medical or chemical information) for members within the organization and to outside groups (e.g., concerning medical or chemical information). Companies that manufacture products as their main purpose were not included. Each domain type was associated with one actual (WebMD: www.WebMD.com) and one fictitious (Web Doctor: www.WebDoctor.org) domain name and web address for a total of 32 domain names investigated (16 domain pairs). All participants viewed all 16 domain types. Approximately half of the participants saw a set of 16 domain names in which half were actual and half were fictitious. The other participants were given the remaining 16 domain names in which half were actual and half were fictitious such that domain name pairs were counterbalanced. Thus, participants saw all of the domain types but only one of its paired domain names: actual or fictitious.

### 2.3. Procedure

Participants were tested individually in sessions that lasted approximately 30 minutes. Following completion of the informed consent, each participant was asked to complete a multi-topic survey that included items on demographics (e.g., age, sex, and occupation) and Internet trust—the main topic of the present research.

Participants were told that there are many kinds of websites created and maintained by a variety of persons and organizations. They were each given a list of 16 organizations and web domain-name addresses with blank spaces next to each. Participants were asked to provide a percentage estimate according to the extent to which they would trust the information presented on the named website. Responses were based on a 101-point scale (0 to 100). Anchor descriptions were provided at the two end points and middle point (0%=Would not trust at all; 50%=Would trust about half; 100%=Would trust completely). After individuals completed the questionnaire, they were then debriefed and given the opportunity to ask questions.

Another group of participants rated the same set of organizations and web domain according to how familiar they were with the organizations and websites. The 9-point rating scale (0 to 8) had the following word anchors associated with the even anchors: (0) Not at all familiar, (2) Somewhat familiar, (4) Familiar, (6) Very familiar, and (8) Extremely familiar.

## 3. Results

Analyses revealed that participants reported on average trusting only 55% of the information across the 16 website domains provided. Although participants rated 8 (50%) of the actual websites higher on trust than its fictitious pair (see Table 1), they rated 3 fictitious websites significantly higher than actual websites, and for the other 5, they did not discriminate between the actual and fictitious website. Analyses involving demographic groupings revealed that older participants reported using a computer and trusting the internet information less than younger participants ( $r = -.16$ ,  $p < .05$ ). Additional analyses yielded no other significant correlations or main effects/interactions as a function of other demographic grouping variables.

Table 1  
Mean Percentage Trust and Mean Familiarity Rating for Actual and Fictitious Websites/Organizations

<b>% Trust</b>	<b>Actual Websites</b>	<b>Familiarity</b>	<b>% Trust</b>	<b>Fictitious Websites</b>	<b>Familiarity</b>
73%***	American Academy of Pediatrics <a href="http://www.AAP.org">www.AAP.org</a>	1.0053%		American Pediatrics <a href="http://www.American-Pediatrics.org">www.American-Pediatrics.org</a>	1.44
55%	Drug Information Association <a href="http://www.DIAHome.org">www.DIAHome.org</a>	.9553%		Medicine Information Association <a href="http://www.MedInfo.org">www.MedInfo.org</a>	1.67*
74%***	Advanced Chemical Safety <a href="http://www.Chemical-Safety.com">www.Chemical-Safety.com</a>	.3654%		American Chemical Laboratories <a href="http://www.ACA.org">www.ACA.org</a>	.35
64%	American Association for Retired Persons <a href="http://www.aarp.org">www.aarp.org</a>	1.60***	59%	Association for Older Americans <a href="http://www.olderamericans.org">www.olderamericans.org</a>	.18
52%*	JD Powers and Associates <a href="http://www.JDPower.com">www.JDPower.com</a>	1.85***	45%	Consumer Satisfaction Federation <a href="http://www.ConsumerRight.com">www.ConsumerRight.com</a>	.65
61%**	National Nutritional Foods Association <a href="http://www.NNFA.org">www.NNFA.org</a>	.82	51%	American Nutritional Foods Assn <a href="http://www.ANAA.com">www.ANAA.com</a>	.74
38%	Crash Worthiness <a href="http://www.Crash-Worthiness.com">www.Crash-Worthiness.com</a>	.2257%***		Crash Safety <a href="http://www.Crash-Safety.org">www.Crash-Safety.org</a>	.85***
61%***	American Dietetic Association <a href="http://www.EatRight.com">www.EatRight.com</a>	2.21***	47%	Dietary Association of America <a href="http://www.DIAA.com">www.DIAA.com</a>	.70
61%	Society for Women's Health Research <a href="http://www.Womens-Health.org">www.Womens-Health.org</a>	1.2965%		Women's Health Association <a href="http://www.WHA.com">www.WHA.com</a>	2.21***
60%	Human Factors and Ergonomics Society <a href="http://www.HFES.org">www.HFES.org</a>	.43	63%	National Ergonomics Association <a href="http://www.NEA.net">www.NEA.net</a>	.36
60%**	WebMD <a href="http://www.WebMD.com">www.WebMD.com</a>	3.49***	49%	Web Doctor <a href="http://www.WebDoctor.org">www.WebDoctor.org</a>	1.45
53%	National Environmental Education and Training Foundation <a href="http://www.NEETF.org">www.NEETF.org</a>	.3355%		American Environmental Education Foundation <a href="http://www.AEEF.org">www.AEEF.org</a>	.47
47%	AAA American Credit Bureau <a href="http://www.AAACredit.com">www.AAACredit.com</a>	1.2560%***		American Credit Foundation <a href="http://www.ACF.com">www.ACF.com</a>	1.73
61%***	American Automobile Association <a href="http://www.AAA.com">www.AAA.com</a>	3.49***	48%	National Automobile Counsel <a href="http://www.NAA.com">www.NAA.com</a>	.74
49%**	American Brokers Corporation <a href="http://www.AmericanBrokersCorp.com">www.AmericanBrokersCorp.com</a>	.8239%		American Brokers Counsel <a href="http://www.Abroker.net">www.Abroker.net</a>	.74
40%	Internet Security Software <a href="http://www.ISS.net">www.ISS.net</a>	.9252%**		Security Software on the Internet <a href="http://www.SSI.net">www.SSI.net</a>	.36

\* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$

Also included in Table 1 are mean familiarity ratings. These data were collected from an independent group of individuals from the same pool of participants that evaluated the domain names on percentage trust. These data show that there are some instances where better known organizations (given relatively high ratings of familiarity) such as the American Automobile Association, and WebMD, were trusted more than its fictitious pair. However there are other instances where people indicating being significantly more familiar with the fictitious organization than the actual organization. There does not appear much of a relationship of familiarity with internet trust except where the organization is highly familiar. Moderate or low familiarity beliefs appear to have a less consistent relationship with Internet trust. Correlational analyses between the internet trust and familiarity for actual and fictitious website domains considered separately or together failed to show any significant relationships.

#### 4. Discussion

This research suggests that people have a moderate amount of confidence (and skepticism) concerning the veracity of information on the internet. In some cases, participants gave substantial trust scores to fictitious names of organizations and websites.

The potential problem with this is that unscrupulous individuals may put up a web site that appears to be reputable when in fact it is not. It may contain false and deceptive information. For example, a fake organization like the National Ergonomics Association could be formed simply for the purpose of lobbying lawmakers into derailing ergonomics laws. Professional ergonomists and graduate students in training would know that the National Ergonomics Association is not a real professional organization. Such discrimination would not be difficult because they would recognize that it is not one of the few authentic organizations in ergonomics (e.g., Human Factors and Ergonomics Society and International Ergonomics Association). However, individuals who lack an extensive background in ergonomics might be misled and consider it credible. The credibility belief might be partly due the organization's name appearing authentic. Credibility beliefs might also be partly due to some of the information appearing reasonable and truthful. Thus, consumers and lawmakers could fall prey and accept as true, deceptive and false information from a bogus organization. Indeed, a mystery

organization with the same or similar name as the National Ergonomics Association provided information to U.S. lawmakers in the year 2000 time frame. They claimed that there was insufficient science to support stronger ergonomics laws. Soon thereafter a proposed U.S. Occupational Safety and Health Administration revision to ergonomics regulations was rescinded. The problem with the National Ergonomics Association is that it appears to be a credible source, and with a mix of truth and deception could influence lay persons' and lawmakers' opinion and "knowledge." The main point is that people may have difficulty in differentiating which organizations and websites are credible and trustworthy. This issue is particularly important when the information involved concerns topics such as health care where safety and risk factors are involved.

This research has implications for companies and other hosts of websites. For example, illegitimate web sites that appear similar (i.e., similar domain names) to legitimate websites could affect the reputation and perceptions of credibility of legitimate sites.

The results also showed a small but significant negative correlation suggesting that older individuals do not trust websites as much as younger adults. This finding is consistent with past research [5], but may also be attributable, at least partly, to a generation gap with respect to computing. There is now a large body of research that demonstrates that adults with ages past their 60s are willing to learn about the internet, contrary to popular belief and early research. Also some research shows that older adults are more wary in sharing personal information online. Although there was an overall lower level of trust with increasing age, generally there was a similar pattern of trust ratings regardless of age.

Internet trust is often related to higher levels of familiarity with the organization. However, relatively lower levels of familiarity do not seem to have much influence on the extent of trust. Trust in the websites seems to depend on the name of the organization and domain name seeming credible. The topic domain of the organization appears to play a role. Medical and health related sites seem to be trusted more than some other areas such as organizations comprised of brokers and security software engineers. This indicates that people possess a certain amount of skepticism about certain topic areas or domains and perceive them as having some heightened risk associated with them.

Other potential implications include the use of interventions to enhance awareness regarding website credibility. The interventions might take the form of

software that automatically performs a "behind the scenes" security check for the user on the legitimacy of the site and possibly past user experiences. Automated checks might also examine available information regarding the background of persons or organizations to which the domain belongs. Other interventions might also focus on identifying credible seals (e.g., VeriSign, etc.), credible suffixes, and easy-to-search websites that warn about potentially fraudulent sites.

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