This is a preprint of a poster accepted for presentation at the 83rd Annual Meeting of the Association for Information Science & Technology (Virtual): Choi, W., Luo, M., & Kim, S. (2020). Validating an extended typology of web credibility assessment. *Proceedings of the Association for Information Science and Technology, 57*(1), e357. https://doi.org/10.1002/pra2.357

Validating an Extended Typology of Web Credibility Assessment

Abstract

This methodology poster introduces an ongoing study seeking to validate an extended typology of web credibility assessments proposed by Choi and Stvilia (2015) using online surveys. The study focuses on health-related topics as an important subject domain for web credibility assessments. The poster describes the study's theoretical background and methodology, especially the process of developing and testing the online survey questionnaire, which consists of 89 questions in five sections: internet use and experience, health information seeking, web credibility assessment, outcomes of web credibility assessment, and demographic factors. A pretest was conducted with eight research assistants experienced with survey designing and blind to the predictions. Assistants' written feedback was collected and employed to improve the survey design. Pretest results and future research directions are discussed.

Introduction

Credibility is an abstract, multifaceted concept that has been defined with varied underlying dimensions, including trustworthiness and expertise (Choi & Stvilia, 2015). Credibility has been studied by scholars from disciplines such as psychology, communication, and information science in different contexts. For example, early research on credibility focused on characteristics that make an individual a credible source in the interpersonal communication context (Hovland Janis, & Kelley, 1953). In the mass-communication context, an important research agenda was examining the relative credibility of news messages among different channels such as newspapers, television, and radio (Carter & Greenberg, 1965). In the web context, various web-specific elements have been identified as credibility markers (e.g., design elements on the interface) that may affect the perceived credibility of the web-based resource (Fogg, 2003).

In their review of the literature on credibility in the web context, also known as web credibility, Choi and Stvilia (2015) argued that the multidimensional nature of credibility and the inevitable influences of media on people's perceptions of information credibility have caused

This is a preprint of a poster accepted for presentation at the 83rd Annual Meeting of the Association for Information Science & Technology (Virtual): Choi, W., Luo, M., & Kim, S. (2020). Validating an extended typology of web credibility assessment. *Proceedings of the Association for Information Science and Technology, 57*(1), e357. https://doi.org/10.1002/pra2.357

confusion and conflation in the use of terms for credibility, underlying dimensions of credibility, and related terms (e.g., quality). As a result, they proposed a conceptual framework to make a clearer, arguably more logical connection between the key dimensions of credibility (i.e., conceptualization) and credibility markers in the web context (i.e., operationalization). Thus far, the conceptual framework has been used to guide empirical investigations on users' web credibility assessment (e.g., Choi, 2020), but the framework has never been validated with quantitative empirical data. This poster introduces an ongoing study to validate the conceptual framework using quantitative online survey data.

Study Design

Theoretical Background

The extended typology of web credibility assessment (Choi & Stvilia, 2015) is based on two existing theoretical frameworks—the two-factor model of credibility by Hovland et al. (1953), identifying trustworthiness and expertise as the key dimensions of credibility, and the web credibility framework by Fogg (2003), identifying operator, content, and design as the three sources (areas) from which various web credibility markers are derived. The extended typology suggests six types of web credibility assessment by cross-mapping the existing two frameworks (hence its name): operator trustworthiness, operator expertise, content trustworthiness, content expertise, design trustworthiness, and design expertise. Based on the definitions of the key concepts in the original works (i.e., Fogg, 2003; Hovland et al., 1953), operator trustworthiness is defined as "the characteristics of the operator of the website or author of the content that affect the user's perception of the site as having the intent to provide valid and accurate information" (Choi, 2020, p. 4). Operator expertise focuses on "the operator's or the author's ability rather than intent to provide valid and accurate information" (Choi, 2020, p. 4). The other four types of web credibility are defined as follows: content trustworthiness and content expertise are defined as "the semantic and structural attributes of the content that affect the user's perception of the site as having the intent (i.e., trustworthiness) or ability (i.e., expertise) to provide valid and accurate information. Design trustworthiness and design expertise refer to the structural,

This is a preprint of a poster accepted for presentation at the 83rd Annual Meeting of the Association for Information Science & Technology (Virtual): Choi, W., Luo, M., & Kim, S. (2020). Validating an extended typology of web credibility assessment. *Proceedings of the Association for Information Science and Technology, 57*(1), e357. https://doi.org/10.1002/pra2.357

technical, aesthetic, and interaction design features affecting the user's perception of the site as having the intent or ability to provide valid and accurate information" (Choi, 2020, p. 4).

Survey Questionnaire Development

The study focuses on health-related topics as an important subject domain for web credibility assessment. Overall, the current survey questionnaire features 89 questions in five sections: internet use and experience, health information seeking, web credibility assessment, outcomes of web credibility assessment, and demographic background. We took two steps to develop survey questions for the main section of the survey—web credibility assessment. First, we identified as many elements as possible from the literature that are known to affect the perceived credibility of web resources. Second, we discussed each item identified regarding whether it qualifies for our definitions of the six types of web credibility. As a result, we selected 69 items and phrased them in the following format: *"When you look for health information regarding your health concerns or questions, to what extent do you consider each of the following statements important in your credibility assessment of health-related websites? Please rate each statement on a scale of 1 to 5, with 1 being 'Not at all important' and 5 being 'Extremely important.'"* Example questions are provided in Table 1. It should be noted that the current categorization of the survey items is tentative because it is based on the researchers' assumptions. As mentioned, validating the construct structure using empirical data is the main goal of the proposed study.

Table 1. *Example questions for six types of web credibility*

	Trustworthiness	Expertise
Operator	• The site is offered by an educational institution. • The site is offered by a commercial company.	• The site is run by an institution/organization that has specialties appropriate for given health topics. • The site has gained good reputation in the given health field.
Content	• The site provides timely information and updates.	• The site references scientific publications.

This is a preprint of a poster accepted for presentation at the 83rd Annual Meeting of the Association for Information Science & Technology (Virtual): Choi, W., Luo, M., & Kim, S. (2020). Validating an extended typology of web credibility assessment. *Proceedings of the Association for Information Science and Technology, 57*(1), e357. https://doi.org/10.1002/pra2.357

Design	• The site tries to cover all the different approaches to a controversial issue. • The site uses consistent colors and icons. • The site is always up and running.	• The site is free from typographical errors. • The site looks professional. • The site enables users to move around the site easily without being lost.

Pretest and Future Directions

In May 2020, we pretested the online questionnaire with eight research assistants in the school with which the principal investigator is affiliated. Each participant completed the survey and provided feedback on the contents and the structure of the questionnaire. Results showed that the survey takes about 17 minutes to complete on average; overall, the questions are easy to understand and answer; and the internal consistencies of the items on the six types of web credibility assessment range from acceptable to excellent: operator trustworthiness (13 items, Cronbach's $\alpha = .71$), operator expertise (8 items, $\alpha = .76$), content trustworthiness (13 items, $\alpha = .78$), content expertise (10 items, $\alpha = .81$), design trustworthiness (11 items, $\alpha = .93$), and design expertise (14 items = .89). After refining the questionnaire based on pretest results, we will conduct a pilot study with students on campus and launch a larger-scale study using a cloudsourcing platform such as Amazon Mechanical Turk. Full results will help determine the structure of the extended typology, which researchers and developers can use to identify more clearly the relevant credibility markers for future projects.

References

Carter, R. F., & Greenberg, B. S. (1965). Newspapers or television: Which do you believe? *Journalism Quarterly*, *42*(1), 29–34. https://doi.org/10.1177/107769906504200104

Choi, W. (2020). Older adults' credibility assessment of online health information: An exploratory study using an extended typology of web credibility. *Journal of the Association for Information Science and Technology*. Advance online publication. https://doi.org/10.1002/asi.24341

This is a preprint of a poster accepted for presentation at the 83rd Annual Meeting of the Association for Information Science & Technology (Virtual): Choi, W., Luo, M., & Kim, S. (2020). Validating an extended typology of web credibility assessment. *Proceedings of the Association for Information Science and Technology, 57*(1), e357. https://doi.org/10.1002/pra2.357

Choi, W., & Stvilia, B. (2015). Web credibility assessment: Conceptualization, operationalization, variability, and models. *Journal of the Association for Information Science and Technology*, *66*(12), 23992414. https://doi.org/10.1002/asi.23543

Fogg, B. J. (2003). *Persuasive technology: Using computers to change what we think and do*. Morgan Kaufmann.

Hovland, C. I., Janis, I. L., & Kelley, H. H. (1953). *Communication and persuasion: Psychological studies of opinion change*. Yale University Press.