

College students' credibility judgments on healthy diet information on social media

Alica Kolarić, Mate Juric and Nikolina Peša Pavlović

University of Zadar, Zadar, Croatia

{akolaric20, mjuric, npesa}@unizd.hr

¹Abstract. The main objective of this study was to investigate how college students judge the credibility of healthy diet information on social media. This mixed-method two-phase sequential study used a survey and individual interview methods to explore how college students judge the credibility of the acquired information, and how their healthy diet behaviour and nutrition literacy are related to the credibility judgment criteria they use. Results show that students value expertise of authors on social media higher than friendliness, but the importance of motivating and friendly interaction is more indicative of students' information use behaviour. Students who exhibit healthy diet behaviour give more value to authors' expertise. Students who have problems in understanding nutrition information rely more on the friendliness and popularity of authors on social media as credibility indicators.

¹ Authors version of the accepted, peer-reviewed manuscript. The final publication is available at link.springer.com

Cite as:

Kolarić, A., Juric, M., Peša Pavlović, N. (2022). College Students' Credibility Judgments on Healthy Diet Information on Social Media. In: Kurbanoglu, S., Špiranec, S., Ünal, Y., Boustany, J., Kos, D. (eds) Information Literacy in a Post-Truth Era. ECIL 2021. Communications in Computer and Information Science, vol 1533. Springer, Cham. https://doi.org/10.1007/978-3-030-99885-1_6

Keywords: Credibility judgements, healthy diet information, social media, nutrition literacy, college students, adolescents.

1 Introduction

As they gradually grow in autonomy, often leaving home and starting an independent life, college students take over the responsibility for making their own decisions including food and dietary choices. Making healthy food choices depends on their nutrition and food literacy competencies [1-2], which include abilities for making credibility judgments. These abilities enable the differentiation of credible information from those that are not a good basis for making food choices. Moreover, the present information overload and confusing environment lack the traditional information intermediaries, which leave information users without helping mechanisms. An increasing number of people are engaged in creating and mediating content supported by rapidly advancing information and communication technology. The accessible range of information sources is wider than ever before, and so are the challenges of verifying the accuracy, authority, objectivity, and currency of information. The young people's abilities to judge the credibility of information may have a serious impact on attitudes and behaviours, and in the context of dietary decisions, on healthy food-related choices. The importance of these issues resulted in calls for research focused on the new millennium information literacy, and issues of credibility judgment and evaluation criteria that are applicable in the information and media-saturated environment [3].

Four literacies in health contexts are important for the development of informed decisions for all involved in health-related context [4]. These four literacies are: health literacy, food literacy, nutrition literacy, and health-promotion literacy. Healthy dietary decisions depend on nutrition and food literacy competencies of individuals [1]. Nutrition literacy is mainly described as the knowledge necessary to obtain and understand nutrition information, while food literacy includes nutrition literacy and further encompasses behaviours that are essential to a healthy diet [1-2]. In a delphi study by Thomas et al. [2], a framework was formed according to which *food literacy includes interconnected attributes organized into the categories of food and nutrition knowledge; food skills; self-efficacy and confidence; food decisions; and ecologic (external) factors*. Food decisions or dietary behaviours are the central part of the framework. The nutrition literacy attributes are included in the self-efficacy and confidence category. A subset of critical nutrition literacy competencies specifically relates to credibility judgements *to be able to distinguish between credible and false nutrition information*. Flanagin and Metzger [5] argue that understanding credibility in a new digital media environment is particularly complex for youth. The notion of credibility refers to people's judgments about trustworthiness of information, based on their own expertise and knowledge [6]. As the acquisition of information is an integral

part of daily activities, people need to assess whether the obtained information is accurate and good for enhancing their knowledge and meeting the desired objectives. Credibility judgment is a usual and recurring activity of information evaluation and is an ongoing process, rather than a set of discrete events [6], [7]. The concept of credibility involves two main components: competence and trustworthiness. Competence or expertise refers to perceived knowledge, skill, experience, and ability to report accurately within the borders of an area providing accurate and valid information, while trustworthiness includes perceived goodness, honesty and morality, and unwillingness to deceive [8], [6]. However, the two main components do not necessarily come together: a competent expert may be untrustworthy or biased, and a trustworthy person may not be competent. Credibility has also been defined with other concepts such as believability [9], fairness, factuality, completeness, freedom from bias, objectivity, and informativeness, hence many agree that the concept is multifaceted and that credibility judgments involve simultaneous evaluation of diverse dimensions. Even so, it is generally accepted that the most credible information comes from sources that are perceived as highly trustworthy and competent. Credibility does not reside in information object or source, although their features may serve as the bases for judging credibility, because people are those who eventually make their own credibility judgments, using their own experience, knowledge, and beliefs, and making the process highly subjective [6].

College students' credibility judgments in seeking everyday life information proved important [10]. Health information remains more important than ever, as it is one of the most important subjects that the Internet users research online [11]. It has been noted that the issues of trust and credibility judgments are especially important in the domain of health literacy and information [3]. The growing variety of youth information behaviour across platforms on social media and mobile Web [12] implies that they interact with dietary information provided by sources of diverse authority, from nutritionists and other professionals to bloggers and influencers. As the credibility of such information sources and the quality of information they provide varies considerably, it is necessary to make an effort to better understand how college students judge the credibility of healthy diet information.

2 Literature review

A substantial body of research tackles the issue of youth interacting with health and diet information, evidencing an increase of the interest. It shows that one of the reasons young people are using online health information is also to help them eat healthier and stay fit [13]. An important step in healthy food choices is the provision of quality information that supports informed food-related choices, which is recognized in the research community [14-15]. Emerging social computing technologies created new possibilities for greater reliance by individuals on more social means of online

information processing and evaluation [16]. However, the quality of online health information remains questionable, hence there is a need to fill the gap in the research literature to understand the relevant criteria for evaluation of such quality [17]. In the times of information overload, information quality is more important than ever, especially regarding the use of specific information sources. It is also essential to examine young people's perceptions of online information and judgments of credibility in different information-use contexts [10]. According to Lee and Choo [18], credibility proved significant in participants' intention to continue using fitness / diet app. Such similar findings are also found in previous studies, where the importance of credibility proved important, especially finding trustworthy information [10], which especially increased when tweens could make connections in the forms of words that are often associated with credibility in health-related contexts [19]. Source preferences proved important in the process of credibility assessments [20-21], although expertise and trustworthiness are difficult to determine [22]. Online sources, family and friends are the most popular information source for seeking nutrition information [23] and healthcare professionals are perceived to be the most reliable source [14], [24-25]. Among the Internet sources, social media platforms in general [26], [13], and image-based platforms such as Instagram, proved as an access choice for nutrition-relevant information [27]. Social tools today prove more important as ever in judging the credibility of online information. Young people assess credibility of social media regarding social metrics, such as likes, dislikes, and user generated content [28], put the emphasis on checking the background of the person sharing the story, as they have a need for health information to be trustworthy and reliable [29]. At the same time, it has been found that for help with making choices, young people turn to information sources that are not only informative, but also motivating and friendly [30].

3 Methodology

The main objective of this study was to investigate how college students judge the credibility of healthy diet information on social media.

The research questions were:

1. How often do students use social media for healthy diet information, and what is the level of trust they attach to this source?
2. What criteria do students use when assessing the credibility of authors on social media and what is the criteria importance?
3. What problems do students encounter when evaluating healthy diet information?
4. Are credibility judgements about the importance of expertise and friendly interaction correlated with frequency of use and trust in advice from authors on social media?

5. Are students' credibility judgements related to their nutrition literacy and healthy diet behaviour?

This research adopted a mixed-method approach and a sequential two-phase research strategy.

A brief pre-survey was used to reach the college students who would be interested in participating in the first research phase. To introduce them to the topic and identify the participants, the students (N=24) were asked to what extent they took care of their diet, how they recognized whether the acquired information was good, useful, and provided by experts, and whether they were willing to take part in an interview on diet issues via Skype. This pre-survey was administrated via Google Forms among the members of a Facebook group of students from the Department of Information Sciences at the University of Zadar. Those who showed an interest were invited for interviews, according to their availability.

The first research phase employed semi-structured individual interviews conducted via Skype and combined with a think-aloud method to examine (1) what sources college students use in their search for healthy diet-related information, (2) what information sources they trusted most, (3) how they judge the credibility of the acquired information, and (3) what is the most challenging task when judging the credibility. The sample was convenient and purposive and included six female students (N=6). The interviews were conducted until the point of saturation was reached, both regarding the earlier interviews and the selected past credibility research. They were recorded and transcribed immediately after the sessions, and the transcripts were subjected to qualitative data analysis [31] using the MAXQDA software. The analyzed data were interpreted and used for the development of the instrument applied in the second research phase. The second phase used a survey to test the results on a wider sample. The instrument was developed from the interview results and from a review of the relevant body of research. The first set of questions (1) resulted from an adjustment of the EHIL survey [32] of health literacy into the context of nutrition and food literacy. For example, EHIL item "I know where to seek health information" was adjusted to "I know where to seek healthy diet information". Additional questions were developed by summarizing and contextually adjusting the food literacy scale used in a study by Cupar and Juric [33]. For example, item "Since I have been a member of the Facebook group, I have been preparing more healthy meals for my children" is adjusted to "I use healthy ingredients to prepare food". The second group of questions was about (2) the frequency of using advice from social media, and the level of trust in these sources. The third (3) group of questions investigated the importance of certain criteria used in judgments on the credibility of authors on social media. The survey used a 5-point scale for most of the items. The survey data was analysed using the "TIBCO Statistica™" program for statistical analysis. The survey was administrated via social media, by posting the SurveyMonkey link on the Facebook page and Instagram profile of the Department of information sciences, and in the Facebook group of students at the University of Zadar,

as well as by e-mailing the students of several departments at the same university. The research was carried out among the students of the University of Zadar, Croatia, from December 2020 (Pre-Survey and Interviews) to April 2021 (Survey). The sample was convenient and purposive (N=138) and included students with different levels of healthy diet habits. The majority of the surveyed students was female (82%). Only 41% of students stated their study field, and among them every second student was from the Department of information sciences.

4 Results

To identify reliable measurement scales, survey data were first prepared using principal components analyses and reliability analyses. Four scales were created (Table 1). The first two address Food literacy attributes: Nutrition literacy and Healthy diet behaviour. Self-efficacy in information seeking and evaluating competencies are two main topics included in the scale of Nutrition literacy. Healthy diet behaviour scale includes items about using healthy groceries, evaluating, checking, comparing, and applying information about healthy nutrition, following expert recommendations, and being informed from multiple sources. Healthy diet behaviour scale has more precise items about students' actual behaviours. In a study by Thomas et al. [2], the nutrition literacy attributes were included in the self-efficacy and confidence category of food literacy, while the Food decisions or dietary behaviours were the central part of the framework of food literacy.

Table 1. Measurement scales properties.

| | Eigen | n_i | α | Mean | SD |
|----------------------------------------------------|--------------|----------------------|----------|-------------|-----------|
| Nutrition literacy | 3.68 | 9 | .82 | 3.69 | 0.59 |
| Healthy diet behaviour | 3.69 | 8 | .82 | 3.69 | 0.66 |
| Author expertise importance (on SM*) | 2.11 | 4 | .64 | 4.05 | 0.71 |
| Motivating and friendly author importance (on SM*) | 3.92 | 7 | .86 | 3.73 | 0.81 |

SM - social media; n_i - number of items; α - Cronbach α; SD - Standard Deviation

Another two factors were identified based on the importance of criteria when judging the credibility of authors on social media: Motivating and friendly author importance, and Author expertise importance (Table 1). Motivating and friendly author importance scale is mostly about the importance of encouragement, friendly communication, trustworthiness and reliability, and good intentions. This scale also includes items about authors' experience, lifestyle and physical appearance, and popularity among social media users. Author expertise importance scale is about the importance of authors' education, the citing of verified information sources, affiliation with a credible institution, and impartiality.

4.1. Use of advice from authors on social media and trust in their credibility

The data collected in the interviews showed that the participants acquired healthy diet information from a wide range of sources. In the case of social media, they reported appreciating friendly interaction and quick response to the followers' questions. The participants reported trusting to information sources that were perceived as educated, experienced and experts (i.e., health professionals, nutritionists), and those whose accomplishments and physical appearance indicated that diet information they provided was of a good quality (i.e., athletes, fitness influencers). Authors on social media and social media in general were used as information sources occasionally ($M = 3.0$). Regarding the total number of students who used a particular social media at least seldom, most of them used YouTube (77%), followed by Instagram (66%) and Facebook (54%), while a smaller number of students used some other platform (22%) and TikTok (20%). Levels of average trust in authors on social media were moderate ($M = 3.2$), while the average trust in social media in general was even lower ($M = 2.7$). Majority (67%) of students followed an author on social media who published information about healthy diet.

4.2. Criteria that students use and importance of certain credibility indicators

The credibility considerations centred around the perceived credibility of the platforms and the authors who provided the information. The interview results showed that the authors who published dietary information via Instagram were held as credible for being perceived as trustworthy, educated and experienced, as experts and professionals. They were also perceived as credible for providing detailed and verified information, being creative in offering diverse ideas, and for being reputable and popular in the user community. Moreover, the perception of credibility was influenced by the overall perception of familiarity and a kind of closeness which seemed to stem from a friendly interaction and communication with users, acting relaxed and from the ability to motivate. One participant noted that the perceived kindness and small details such as putting smiley faces in the comments made her feel somehow connected to the Instagram influencer who she followed. Even so, some of the respondents expressed a level of criticism toward social media as sources that could not be completely trusted for provision of credible information.

The survey results on the importance of certain indicators of the author's credibility on social media showed that not all criteria were equally important, ANOVA $F(11, 127) = 48.2$, $p = 0.001$. The results (post hoc HSD tests) showed that the most important criteria were: providing verified information ($M = 4.5$), expertise ($M = 4.5$) and experience of the author ($M = 4.4$). The next group of criteria that were moderately important included the impression of trustworthiness ($M = 4.1$), being well-meant ($M = 4.0$), encouragement (4.0), and impartial advice ($M = 3.9$). Slightly less, but still relatively important, were the criteria of physical appearance and lifestyle of the author ($M = 3.6$), friendliness ($M = 3.4$) and belonging to a credible institution ($M = 3.4$). The least important criteria were the popularity of the author ($M = 2.8$) and personal acquaintance with the author ($M = 3.1$). Generally, on the level of two latent variables,

Author expertise was perceived to be more important than Motivating and friendly author (Table 1), $t = 4.8$, $df = 130$, $p < 0.01$.

Furthermore, the students generally agreed with the statement that they evaluated information using the criteria of consistency of information from multiple sources ($M = 3.6$, $SD = 1.1$). Such a check of the consistency of information was mostly or completely applied by the largest number of respondents (66%). The use of authors' expertise as a credibility criterion was reflected in the students' answers to the question whether they followed recommendations of experts ($M=3.1$, $SD=1.0$). Almost 40% of the students stated that they mostly or completely followed the recommendations of experts.

4.3. Problems when evaluating information

Most of the interview participants named the assessment of whether a piece of acquired information matches their specific dietary needs as the greatest difficulty they encountered when evaluating information. On average, most of the surveyed students did not have problems with the assessment of which nutritional information was useful to them ($M=2.2$, $SD=1.0$). Only 11% of the participants reported having or mostly having such problems. Problems and difficulties with seeking and judging information reflected in the participants' answers to survey questions about their nutrition literacy. On average ($M=3.69$, Table 1), the students stated that they mostly did not have difficulties when seeking and evaluating nutrition information.

4.4. Interrelations of credibility judgements with frequency of use and trust in advice from authors on social media

The correlations of the frequency of use of advice from authors from social media and social media in general, with the assessments of the importance of credibility criteria showed that friendly interaction, rather than expertise, was the reason that an author was actively followed as an information source. The importance of expertise was not significantly correlated with the frequency of using social media and authors on that platform as information sources (Table 2). The importance of seeing an author as motivating, friendly, experienced, popular, and attractive was correlated (Table 2) with the frequency of following advice from those authors (Motivating and friendly author importance scale).

Table 2. Correlations of credibility criteria importance with use and trust in social media.

| | Author expertise importance | Motivating and friendly author importance |
|-----------------------------|----------------------------------------|------------------------------------------------------|
| Use of social media | 0.17 | 0.45 |
| Use of SM Authors' advice | 0.15 | 0.36 |
| Trust in social media | 0.26 | 0.50 |
| Trust in SM Authors' advice | 0.18 | 0.42 |

SM – social media; all $r > 0.17$ are significant, $p < 0.05$

The general level of trust in social media and in individual authors was associated with perceived importance of expertise of the author, and with the perceived importance of motivating and friendly style of the author. However, the correlations with the Motivating and friendly author importance were higher than correlations with Author expertise importance (Table 2).

4.5. Interrelations of credibility judgements with students' nutrition literacy and healthy diet behaviour

Nutrition literacy or self-efficacy in search and evaluation of nutrition information was negatively correlated with the assessment of the importance of the author's popularity in the community of social media users ($r = -0.23$). In other words, the students who perceived themselves as effective in seeking and critically evaluating nutrition information were less appreciative of the author's popularity as an indicator of credibility. On the other hand, the students who found it difficult to find and evaluate nutrition information attached more importance to the popularity of the author on the social media. Therefore, it may be concluded that popularity is a less valuable criterion, i.e., it can even be indicative of low nutrition literacy if a person attaches great importance to it. Accordingly, popularity is among the least important criteria ($M = 2.8$).

Results on the Motivating and friendly author importance scale were not significantly correlated with the results on the Nutrition literacy scale ($r = -0.14$, $df = 129$, $p > 0.05$). However, the overall results on the Motivating and friendly author importance scale were correlated with two items from the Nutrition literacy scale: difficulty in understanding terminology ($r = 0.19$) and understanding nutrition information ($r = -0.21$). More precisely, the importance of friendliness and popularity was related to difficulties in understanding the terminology and nutrition information. This may indicate that some students who have problems in understanding nutrition information rely on friendliness and popularity of authors on social media as credibility indicators. The conclusion is less reliable since it is based on correlations between individual items, and not the entire scales.

Healthy diet behaviour was correlated to the trust in the accuracy of information from certain authors on social media ($r = 0.24$), as well as with the frequency of using advice from authors on social media ($r = 0.39$). Healthy diet behaviour was expressed among the students who valued Author expertise ($r = 0.22$), more precisely among those who valued education and impartiality. Also, healthy behaviours were correlated with the value given to the importance of author's experience and being well-meant. To sum up, students who valued the importance of authors' education, experience, impartiality, and being well-meant as credibility criteria expressed slightly higher level of healthy diet behaviours.

5 Discussion

The overall objective of this study was to investigate how college students judged the credibility of healthy diet information, while the focus was on the criteria used for judging the credibility of authors on social media. The college students' subjective judgements were analysed in relation to elements of their Food literacy, and trust and use of social media.

Research question 1 (RQ1). Students meet their nutrition needs by seeking information from a variety of information sources, including social media. Previous research has also shown that social media [26], [13], and image-based platforms such as Instagram, are an accessible choice for nutrition-relevant information [27]. In line with earlier studies, the study has showed that social media are popular information sources for seeking nutrition information [23], [26], [13], [27]. The majority of the surveyed students followed specific authors on social media regarding healthy diet topics. Interviewed students reported appreciating authors' friendly interaction and trusting information sources perceived as educated, experienced, and experts (health professionals, nutritionists), as well as sources whose sports achievements and physical appearance, prove their knowledge and the quality of information they provided (athletes, fitness influencers). The survey results echo the previous studies confirming that the students value authors expertise [14], [24-25], and showing that they moderately trust authors on social media [24]. Moreover, it shows that YouTube and Instagram are the most often used platforms for the purpose of obtaining information on healthy diet.

RQ2. Students' judgments on the credibility of information provided by authors on social media, reported in the interviews, centred around the characteristics of information sources which made them believable. The characteristics, the judgment criteria the students used, were education, expertise, experience, trustworthiness, reputation and popularity in the users' community. The ability to provide detailed and verified information also proved important, as well as motivating and friendly interaction. The use of socially generated cues such as users' comments and like to dislike ratio were proved important in youth's interaction with information [28], [34]. This phenomenon was also recognized as a bandwagon heuristic [20], which is defined as a mental shortcut for effortless assessment of believability of information if others believe it too. The survey results repeated some of the interview results and echoed previous studies showing that the most important credibility judgment criteria were author's expertise [14], [24], experience [29], and ability to provide verified information. Trustworthiness, reliability [35], expertise, and experience [30] were proved as factors of information source choice that were important to young people who sought information for their choices and problematic situations. The perception of impartiality, trustworthiness, being well-meant, and ability to motivate were proved moderately important credibility judgment criteria, while physical appearance, lifestyle, friendliness of author, and belonging to a credible institution were less, but still relatively important. The author's popularity and knowing the author in person proved

to be the least important to the majority of the surveyed students. Moreover, the interviews indicated, and the survey confirmed the results that are in line with some earlier studies, that is, college students sought to verify information obtained on the Internet by additional research on other websites, applying the criteria of matching of information from different sources [10], [36], [37]. Criticism toward the Internet and social media as sources that cannot be completely trusted for providing credible information, expressed by some of the participants, correspond with findings from studies of credibility in other contexts [38], [28].

RQ3. Although the interviews indicated that the greatest difficulty that the participants faced was to assess whether or not the obtained information matched their individual nutrition needs, the surveyed students reported not having problems with such assessments. Perhaps this may be attributed to a greater awareness about the assessment process prompted by looking at specific information sources during interview sessions. On average, students reported that they mostly did not have difficulties with seeking and evaluating information, as reflected in their higher level of nutrition literacy self-efficacy. Eysenbach [23] argues that traditional credibility evaluation criteria such as accuracy and completeness are problematic in the cases of health information as they are difficult to measure objectively in the medicine domain. Rather, credibility evaluations in health context primarily depend on user needs and expectations. Although digital media provides opportunities to acquire health information rather independently and autonomously, young people need to reach a degree of cognitive ability, knowledge, self-efficacy, and autonomy [23] to evaluate and effectively use the information for making good dietary choices. Moreover, it has been found that the youth tend to overestimate their capacities to evaluate information and that experience is critical in credibility perceptions and evaluation practices [39]. In this light, we may question whether the confidence in evaluating healthy diet information reflects the survey respondents' true abilities to perform such a complex and challenging process.

RQ4. Moreover, the survey aimed at testing a hypothesis developed from the interview results and based on some previous credibility studies in other contexts [39-40], which suggest that the quality of the relationship with interpersonal information source can be more important than author's expertise in seeking information from specific information source. The results showed that on average, author expertise was perceived to be more important than motivating and friendly interaction of authors on social media. The students were aware of the importance of the author's expertise while assessing credibility, which was reflected in the correlations between the level of trust in the author and the importance of the author's expertise. However, the students' behaviours were not entirely consistent with this statement. Expertise was important to almost everyone, while friendly interaction was more important to those students who used social media more frequently to obtain healthy diet information. More precisely, the importance of authors being motivating, friendly, experienced, popular, and attractive was correlated with the frequency of following advice from those authors, while the authors' expertise was not. It may be concluded that the key reason why an

individual author was followed as an information source on social media was the author's friendly interaction, rather than his/her expertise. The reason for that could be that expertise is important to almost everyone, while friendly interaction is the key to attract more active followers on social media. This is in line with the conclusion from the study by Mackenzie [40] that the "relationship, more than knowledge, is the reason that an individual is sought as an information source". Kolarić found that young people might be prone to mistake the quality of relationship with interpersonal sources with credibility of the information sources, appreciating sources that are well-meaning, familiar, supportive and caring [41]. Young people's affinity toward information sources that are not only informative, but also motivating and friendly, echoes the work by Julien who has found that young people need and seek help from friendly information sources which provide emotional help, motivation and support [30]. This might be a matter of concern because credible information is provided only by sources that are both competent and trustworthy. Basing food choices on information provided by sources that are friendly, motivating and supportive, but not knowledgeable and competent, may result in unhealthy behaviour and negative consequences.

RQ5. Students who valued the importance of authors' education, experience, impartiality and being well-meant as credibility criteria expressed slightly higher level of healthy diet behaviour. Healthy diet behaviour was positively correlated to the level of trust and the frequency of using advice from authors on social media. Students who found it difficult to find and evaluate nutrition information attached more importance to the popularity of the author on the social media. Furthermore, some students who had problems in understanding nutrition information relied on friendliness and popularity of authors on social media as credibility indicators. Such behaviours of some students fit into the description of the bandwagon effect [20]. Due to uncertainty in their own knowledge of a certain topic, some of the surveyed students relied more on the popularity of authors as an indicator of their credibility. Most of the surveyed students considered popularity irrelevant, but friendliness was considered moderately relevant. In future research, it is necessary to further verify whether there is a sufficient basis for defining friendliness as a credibility heuristic cue.

5 Conclusion

College students judge the credibility of healthy diet information based on specific source credibility indicators. The majority of students check the consistency of information from multiple sources, but the focus in this research was on criteria in judging credibility of authors on social media. Students claim to value author's expertise higher than friendly interaction, but friendly interaction is more indicative of their information use behaviour. A motivating and friendly interaction is important to students who use social media more frequently to obtain healthy diet information. Students who exhibit healthy diet behaviour give more value to authors' expertise, while students who have problems in understanding nutrition information rely more on the

friendliness and popularity of authors on social media as credibility indicators. These findings might serve as guidelines for the development of health-related literacy instructions that would educate young people on making credibility judgments by using both the criteria of competence and trustworthiness of information sources. Popularity and perceived friendliness of sources that offer information on social media must not be mistaken for credibility in providing healthy diet information.

6 Limitations

The generalizability of average values was not the purpose of this study; rather, the results present attitudes of the college students at the University of Zadar who participated in the research process. The main contribution of this research are relations between key concepts, specifically between user behaviours and cognitive credibility judgements.

References

1. Krause, C., Sommerhalder, K., Beer-Borst, S., Abel, T. Just a Subtle Difference? Findings From a Systematic Review on Definitions of Nutrition Literacy and Food Literacy. *Health Promotion International* 33, 3, 378-389 (2018)
2. Thomas, H., Perry, E. A., Slack, J., Samra, H. R., Manowiec, E., Petermann, L., Manafò, E. and Kirkpatrick, S. I. Complexities in Conceptualizing and Measuring Food Literacy. *Journal of the Academy of Nutrition and Dietetics*, 119, 4, 563-573 (2019)
3. Špiranec, S.: Information Literacy in Web 2.0 Environments: Emerging Dimensions of Research. *Libellarium: Journal for the Research of Writing, Books, and Cultural Heritage Institutions* 7, 1, 55-72 (2014)
4. Truman, E., Bischoff, M., Elliott, C. Which Literacy for Health Promotion: Health, Food, Nutrition or Media?. *Health Promotion International* 35, 2, 432-444 (2020)
5. Flanagin, A. J., Metzger, M. J. Digital Media and Youth: Unparalleled Opportunity and Unprecedented Responsibility. In: Metzger, M. J., Flanagin, A. J. (eds.) *Digital Media, Youth, and Credibility*, pp. 5-28. The MIT Press (2008)

6. Rieh, S. Y. Credibility and Cognitive Authority of Information. *Encyclopedia of Library and Information Sciences*, 3rd ed., 1, 1, 1337-1344 (2010)
7. Fogg, B. J. Prominence-interpretation Theory: Explaining How People Assess Credibility Online. In: *CHI'03 Extended Abstracts on Human Factors in Computing Systems*, pp. 722-723 (2003)
8. Wilson, P. *Second-Hand Knowledge: an Inquiry into Cognitive Authority*. Greenwood, Westport, London, (1983)
9. Savolainen, R. *Everyday Information Practices: a Social Phenomenological Perspective*. The Scarecrow Press, Lanham, Toronto, Plymouth (2008)
10. Rieh, S.Y., Hilligoss, B. "College Students' Credibility Judgments in the Information-Seeking Process." In: Metzger, M. J., Flanagin, A. J. (eds.) *Digital Media, Youth, and Credibility*, pp. 49-72. The MIT Press (2008)
11. Fox, S. *The Social Life of Health Information*, 2011. In: California Healthcare Foundation, pp. 1-33 (2011)
12. Waugh, A., Ahn, J., Magee, R. M., Bowler, L., Agosto, D. E., Subramaniam, M. Youth Beyond Borders: Methodological Challenges in Youth Information Interaction. *Proceedings of the American Society for Information Science and Technology* 51, 1, 1-5 (2014)
13. Wartella, E., Rideout, V., Montague, H., Beaudoin-Ryan, L., Lauricella, A. Teens, Health and Technology: A National Survey. *Media and Communication*, 4, 3, 13-23 (2016)
14. Quaidoo, E. Y., Ohemeng, A., Amankwah-Poku, M. Sources of Nutrition Information and Level of Nutrition Knowledge Among Young Adults in the Accra Metropolis. *BMC Public Health* 18, 1, 1-7 (2018)
15. Larsen, J. N., Martey, R. M. Adolescents Seeking Nutrition Information: Motivations, Sources and the Role of the Internet. *International Journal of Information and Communication Technology Education (IJICTE)*, 7, 3, 74-85 (2011)
16. Metzger, M. J., Flanagin, A. J., Medders, R. B. Social and Heuristic Approaches to Credibility Evaluation Online. *Journal of Communication*, 60, 3, 413-439 (2010)
17. Sun, Y., Zhang, Y., Gwizdka, J., Trace, C. B. Consumer Evaluation of the Quality of Online Health Information: Systematic Literature Review of Relevant Criteria and Indicators. *Journal of Medical Internet Research* 21, 5, e12522 (2019)
18. Lee, H. E., Cho, J. What Motivates Users to Continue Using Diet and Fitness Apps? Application of the Uses and Gratifications Approach. *Health Communication* 32, 12, 1445-1453 (2017)
19. Subramaniam, M., Taylor, N. G., Jean, B. S., Follman, R., Kodama, C., Casciotti, D. As Simple as That?: Tween Credibility Assessment in a Complex Online World. *Journal of Documentation* (2015)

20. Sundar, S. S. (2008). The MAIN model: A Heuristic Approach to Understanding Technology Effects on Credibility. In: Metzger, M. J., Flanagin, A. J. (eds.) *Digital Media, Youth, and Credibility*, pp. 73-100. The MIT Press (2008)
21. Hu, Y. Sundar, S. S. Effects of Online Health Sources on Credibility and Behavioral Intentions. *Communication Research* 37, 1, 105-132 (2010)
22. Gray, N.J., Klein, J.D., Noyce, P.R., Sesselberg, T.S. and Cantrill, J.A. Health Information-Seeking Behaviour in Adolescence: The Place of the Internet. *Social Science & Medicine* 60, 7 1467-1478 (2005)
23. Eysenbach, G. Credibility of Health Information and Digital Media: New Perspectives and Implications for Youth. In: Metzger, M. J., Flanagin, A. J. (eds.) *Digital Media, Youth, and Credibility*, pp. 123-154. The MIT Press (2008)
24. Cash, T., Desbrow, B., Leveritt, M., Ball, L. Utilization and Preference of Nutrition Information Sources in Australia. *Health Expectations* 18, 6, 2288-2295 (2015)
25. Hesse, B. W., Nelson, D. E., Kreps, G. L., Croyle, R. T., Arora, N. K., Rimer, B. K., Viswanath, K. Trust and Sources of Health Information: The Impact of the Internet and its Implications for Health Care Providers: Findings From the First Health Information National Trends Survey. *Archives of Internal Medicine* 165, 22, 2618-2624 (2005)
26. Moorman, E. L., Warnick, J. L., Acharya, R., Janicke, D. M. The Use of Internet Sources for Nutritional Information is Linked to Weight Perception and Disordered Eating in Young Adolescents. *Appetite* 154, 104782 (2020)
27. Wilson, B., Knobloch-Westerwick, S., Robinson, M. J. Picture Yourself Healthy—How Users Select Mediated Images to Shape Health Intentions and Behaviors. *Health Communication* 34, 8, 838-847 (2019)
28. Fergie, G., Hunt, K., Hilton, S. What Young People Want From Health-Related Online Resources: A Focus Group Study. *Journal of Youth Studies* 16, 5, 579-596 (2013)
29. St. Jean, B., Greene Taylor, N., Kodama, C., Subramaniam, M. Assessing the Health Information Source Perceptions of Tweens Using Card-Sorting Exercises. *Journal of Information Science* 44, 2, 148-164 (2018)
30. Julien, H. E. How Career Information Helps Adolescents' Decision-Making. In: *Proceedings of an International Conference on Information Seeking in Context*, pp. 371-385 (1997)
31. Gillham, B. *The Research Interview*. Continuum, London, New York (2000)
32. Hirvonen, N., Enwald, H., Mayer, A.K., Korpelainen, R., Pyky, R., Salonurmi, T., Savolainen, M.J., Nengomasha, C., Abankwah, R., Uutoni, W. and Niemelä, R. (2020). Screening Everyday Health Information Literacy

- Among Four Populations. *Health Information & Libraries Journal* 37, 3, 192-203 (2020)
33. Cupar, D., Juric, M. Developing Food and Nutrition Literacy with the Croatian Facebook Group “Homemade Food for Babies”. In: Kurbanoglu S. et al. (eds) *European Conference on Information Literacy*, pp. 3-13. Springer, Cham (2018)
 34. Loke, C., Foo, S., Majid, S. Video Seeking Behavior of Young Adults for Self-Directed Learning. In: *International Conference on Asian Digital Libraries*, pp. 314-324. Springer, Cham (2017)
 35. Markwei, E., Rasmussen, E. Everyday Life Information-Seeking Behavior of Marginalized Youth: A Qualitative Study of Urban Homeless Youth in Ghana. *International Information & Library Review* 47, 1-2, 11-29 (2015)
 36. Hawkins, B. Does Quality Matter? Health Information Behaviors of LGBTQ Youth in Prince George, Canada. *Proceedings of the Association for Information Science and Technology* 54, 1, 699-701 (2017)
 37. Hirvonen, N., Tirroniemi, A., Kortelainen, T. The Cognitive Authority of User-Generated Health Information in an Online Forum for Girls and Young Women. *Journal of Documentation* (2019)
 38. Flanagin, A., Metzger, M. The Perceived Credibility of Online Encyclopedias Among Children. In: *Proceedings of the International AAAI Conference on Web and Social Media* 4, 1 (2010)
 39. Flanagin, A., Metzger, M. *Kids and Credibility: An Empirical Examination of Youth, Digital Media Use, and Information Credibility*. The MIT Press, Cambridge, London (2010)
 40. Mackenzie, M. L. Managers Look to the Social Network to Seek Information. *Information Research* 10, 2, 10-2, (2005)
 41. Kolarić, A. *Understanding Adolescent Information Behavior from the Perspective of Informed Decision Making Process*. PhD Thesis, University of Zadar, Zadar, Croatia (2020), <https://urn.nsk.hr/urn:nbn:hr:162:320297>

Authors version of the accepted, peer-reviewed manuscript. The final publication is available at link.springer.com . Cite as:

Kolarić, A., Juric, M., Peša Pavlović, N. (2022). College Students’ Credibility Judgments on Healthy Diet Information on Social Media. In: Kurbanoglu, S., Špiranec, S., Ūnal, Y., Boustany, J., Kos, D. (eds) *Information Literacy in a Post-Truth Era. ECIL 2021. Communications in Computer and Information Science*, vol 1533. Springer, Cham. https://doi.org/10.1007/978-3-030-99885-1_6

College students' credibility judgments on healthy diet information on social media

Alica Kolarić, PhD

Mate Juric, PhD

Nikolina Peša Pavlović

Department of Information Sciences
University of Zadar



The goal

✓ to investigate how college students judge the credibility of healthy diet information on social media



INFLUENCER MARKETING

15 Healthy Food Instagram Accounts to Follow in 2020

RQ's

1. How often do students use social media for healthy diet information, and what is the level of trust they attach to this source?
2. What criteria do students use when assessing the credibility of authors on social media and what is the criteria importance?
3. What problems do students encounter when evaluating healthy diet information?
4. Are credibility judgements about the importance of expertise and friendly interaction correlated with frequency of use and trust in advice from authors on social media?
5. Are students' credibility judgements related to their nutrition literacy and healthy diet behaviour?

Research

- a mixed-method approach
- a sequential two-phase research strategy
- the students of the University of Zadar, Croatia
- December 2020 to April 2021

Semi-structured individual interviews + think-aloud method

- via Skype
- convenient purposive sample
- N=6



Survey

- convenient and purposive sample
- N=138

Results

RQ1:

How often do students use social media (SM) for healthy diet information, and what is the level of trust they attach to this source?

-
- For meeting their nutrition needs, students seek information from a variety of information sources, including SM (Moorman et al. 2020, Wartella, et al. 2016, Eysenbach 2008, Wilson et al. 2019).

1st phase

- appreciate authors' friendly interaction
- trust educated, experienced, and experts (health professionals, nutritionists)
- trust sources whose sports achievements and physical appearance, prove their knowledge and the quality of information they provided (athletes, fitness influencers)

2nd phase

- the majority of the surveyed students followed specific authors on SM regarding healthy diet topics
- value expertise (Quaidoo et al. 2018, Cash et al. 2015, Hesse et al. 2005)
- moderately trust authors on social media
- YouTube and Instagram most often used platforms

RQ2:

What criteria do students use when assessing the credibility of authors on social media and what is the criteria importance?

1st phase

The criteria used for credibility judgments on authors on SM

- education, expertise, experience, trustworthiness, reputation and popularity in the users' community
 - provide detailed, verified information
 - motivating, friendly interaction
- reputation, popularity in the users' community (Fergie et al. 2013, Loke et al. 2017) → *bandwagon heuristic* (Sundar 2008)

2nd phase

The criteria used when judging the credibility of authors on social media and its importance

- the most important criteria → **expertise** (Quaidoo et al. 2018, Cash et al. 2015), **experience** (St. Jean et al. 2018,), **provide verified information**

The criteria used when judging the credibility of authors on social media and its importance (cont'd)

- moderately important → impartiality, trustworthiness, being well-meant, ability to motivate
- less, but still relatively important → physical appearance, lifestyle, friendliness, credible institution
- the least important → the author's popularity and knowing the author in person

The criteria used when judging the credibility of authors on social media and its importance (cont'd)

- **verifying information** by additional research (Rieh and Hilligoss 2008, Hawkins 2017, Hirvonen et al. 2019)
- **criticism** toward **the Internet** and **social media** (Flanagin and Metzger 2010, Fergie et al. 2013)

RQ3:

What problems do students encounter when evaluating healthy diet information?

Problems that students encounter when evaluating healthy diet information

1st phase

- difficult to assess **whether** or not **the obtained information matched individual nutrition needs**

≠

- 2nd phase / Survey results
- mostly **did not have difficulties** when seeking and evaluating information

Problems that students encounter when evaluating healthy diet information

Eysenbach (2008) - credibility evaluations in health context primarily depend on user needs and expectations, require a degree of cognitive ability, knowledge, self-efficacy, and autonomy

Flanagin and Metzger (2010) - the youth tend to overestimate their capacities to evaluate information, experience is critical in credibility perceptions and evaluation practices

Does the confidence in evaluating healthy diet information reflects the survey respondents' true abilities to perform such a complex and challenging process?

RQ4:

Are credibility judgements about the importance of expertise and friendly interaction correlated with frequency of use and trust in advice from authors on social media?

The correlation between the importance of expertise and friendly interaction with frequency of use and trust in advice from authors on SM

1st phase

- **The quality of the relationship with interpersonal information source can be more important than author's expertise** in seeking information from specific information source

2nd phase

- **Author's expertise is more important** than motivation and friendly interaction of authors on social media
- **Friendly interaction was more important to students who used SM more frequently** →
- **Individual authors are followed** as information source on SM **for their friendly interaction**, rather than his/her expertise (Julien, Mackenzie 2005, Kolarić 2020)
- **A matter of concern!**

RQ5:

Are students' credibility judgements related to their nutrition literacy and healthy diet behaviour?

The correlation of students' credibility judgments and their nutrition literacy and healthy diet behavior

2nd phase

- students who valued the importance of authors' education, experience, impartiality and being well-meaning as credibility criteria expressed slightly higher level of healthy diet behaviour
- healthy diet behaviour was positively correlated to the level of trust and the frequency of using advice from authors on social media

The correlation of students' credibility judgments and their nutrition literacy and healthy diet behavior (Cont'd)

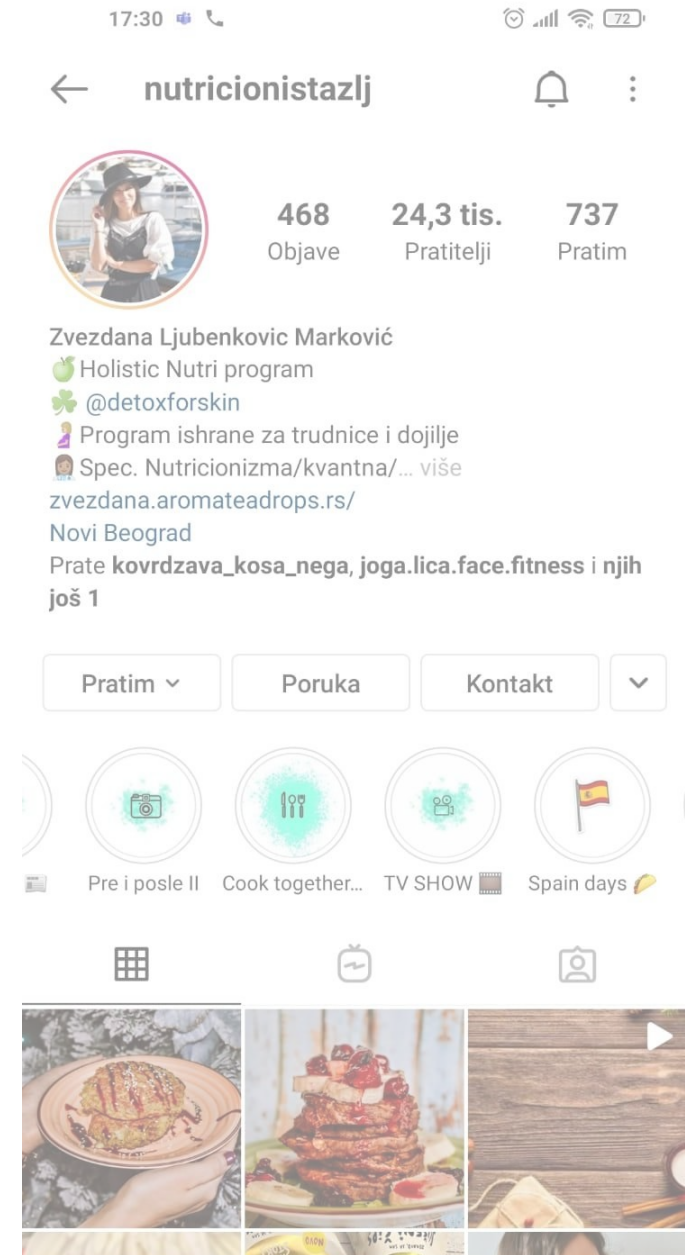
- students who found it difficult to find and evaluate nutrition information attached more importance to the popularity of the author on the social media
- some students who had problems in understanding nutrition information relied on friendliness and popularity of authors on social media as credibility indicators → the bandwagon effect

Conclusion

- ✓ The students check the consistency of information from multiple sources.
- ✓ They value author's expertise higher than friendly interaction, but friendly interaction is more indicative of their information use behavior.
- ✓ Motivating and friendly interaction is more important to students who use SM more frequently to obtain healthy diet information.
- ✓ Students who exhibit healthy diet behaviour give more value to authors' expertise, while students who have problems in understanding nutrition information rely more on the friendliness and popularity of authors on social media as credibility indicators.
- ✓ **Popularity and perceived friendliness of sources that offer information on social media must not be mistaken for credibility in providing healthy diet information.**

Future research

Is there a sufficient basis for defining friendliness as a credibility heuristic cue?



Q&A

Contacts

Alica Kolarić, e-mail: akolaric20@unizd.hr

Mate Juric, e-mail: mjuric@unizd.hr

Nikolina Peša Pavlović, e-mail: npesa@unizd.hr