Research Article

Use of Heuristics in Credibility Judgment of Health Information on Facebook by Different Levels of Health Motivation and Health E-mavens

การใช้แนวคิดเชิงรวบรัดในการตัดสินความน่าเชื่อถือของข้อมูลสุขภาพบนเฟซบุ๊กระหว่างกลุ่มผู้ใช้ชาวไทยที่มีระดับแรงจูงใจและความเชี่ยวชาญด้านสุขภาพที่แตกต่างกัน

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Abstract

This paper examines Thai Facebook users' credibility judgments about health information on Facebook based on their differences in levels of health motivation and whether they are health e-mavens. Thai Facebook users (*N* = 480) responded to questionnaires asking about their health motivation, health e-mavens, and their uses of heuristics in credibility judgment. The study showed that Facebook users applied all five types of heuristics. Significant differences were found in the types of heuristics used across different levels of health e-mavens and across different levels of health motivations. Significant differences were found in the use of three heuristic groups: reputation heuristic, expectancy violation heuristic, and bandwagon heuristic. However, no differences were found in the use of authority heuristic and persuasive intense heuristic.

Keywords: *Credibility, Health Information, Facebook, Health Motivation, Health E-mavens*

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บทคัดย่อ

บทความวิจัยชิ้นนี้มีวัตถุประสงค์เพื่อสำรวจการตัดสินความน่าเชื่อถือของข้อมูลสุขภาพที่ปรากฏบนเฟซบุ๊กของผู้ใช้เฟซบุ๊กชาวไทย โดยมุ่งศึกษาเปรียบเทียบความแตกต่างในแง่แรงจูงใจด้านสุขภาพและความเป็นผู้เชี่ยวชาญด้านสุขภาพบนสื่ออิเล็กทรอนิกส์ที่มีต่อการตัดสินความน่าเชื่อถือดังกล่าว งานวิจัยนี้เก็บข้อมูลด้วยแบบสอบถามจากผู้ใช้เฟซบุ๊กชาวไทยจำนวน 480 คน ผลการวิจัยพบว่า ผู้ใช้เฟซบุ๊กชาวไทยอ้างอิงตัวชี้นำแบบรวบรัดในการตัดสินความน่าเชื่อถือทั้งห้ากลุ่ม ทั้งนี้ พบความแตกต่างอย่างมีนัยสำคัญในการอ้างอิงตัวชี้นำแบบรวดรัดในการตัดสินความน่าเชื่อถือของผู้ใช้เฟซบุ๊กที่มีระดับความเป็นผู้เชี่ยวชาญด้านสุขภาพบนสื่ออิเล็กทรอนิกส์แตกต่างกันและมีระดับแรงจูงใจด้านสุขภาพที่แตกต่างกัน โดยการอ้างอิงตัวชี้นำแบบรวดรัดในการตัดสินความน่าเชื่อถือของข้อมูลสุขภาพที่มีความแตกต่างกันอย่างมีนัยสำคัญนั้นพบในสามกลุ่ม ได้แก่ ตัวชี้นำในกลุ่มความมีชื่อเสียงของผู้ให้ข้อมูล กลุ่มความขัดแย้งกับความคาดหวังของผู้รับสาร และกลุ่มกระแสของผู้อื่น แต่ไม่พบความแตกต่างในกลุ่มความมีอำนาจในการให้ข้อมูล และกลุ่มความมุ่งมั่นในการโน้มน้าวใจ

คำสำคัญ: *ความน่าเชื่อถือ ข้อมูลสุขภาพ เฟซบุ๊ก แรงจูงใจด้านสุขภาพ ความเชี่ยวชาญด้านสุขภาพ*

Introduction

Facebook has emerged as a resource for health information. Patients and people with a wide range of health concerns use Facebook to interact with others worldwide to ask questions about health information, lifestyles and health experiences, or personal opinions toward health-related products and treatments (Zhang, He, & Sang, 2013).

Although Facebook is able to provide countless pieces of information within seconds, it is a challenge to users' credibility judgment. Facebook has an abundance of both informative and uninformative content, and there is a lack of assurance about the uniformity in content quality that users can refer to when assessing content credibility or quality (Metzger, 2007; Sundar, 2008). Instead, information may have unclear or unidentified sources (Self, 2009; Sundar, 2008) and the information available may be uneven in quality (Benigeri & Pluye, 2003). Research has shown that some of the health information reported on Facebook was not reliable, false, and biased (Zhang, 2013). Some responses to messages on Facebook failed to provide facts and valid explanations to symptoms or conditions (Zhang et al., 2013). It is crucial, therefore, to understand people's judgment of health information credibility on Facebook. Credible health information can provide helpful guidance for keeping people and those close to them healthy and can help them tackle health issues that arise. On the contrary, utilizing false health information can be very risky.

This research examined Facebook users' credibility judgments about health information by considering their decision-making process about cues attached to different types of health information. We expect that motivational and cognitive triggers will influence Facebook users to make different types of credibility judgments about health information. The findings will extend the knowledge in the area of credibility to health information in a social media setting.

Credibility

Credibility is a concept that has been studied widely. Previous research identified two dimensions that influence perceptions of

source credibility: trustworthiness and expertise (Fogg & Tseng, 1999; Tseng & Fogg, 1999). According to Fogg and Tseng (1999), trustworthy sources are those that come across as well-intentioned, truthful, and unbiased. On health-related websites, the source's trustworthiness was identified as a factor influencing credibility (Chinthanorm, 2008). Sources with expertise are described as ones that come across as 'knowledgeable, experienced, competent' (Fogg & Tseng, 1999). Competence refers to the source's ability to present accurate and correct information (Fogg & Tseng, 1999; Tseng & Fogg, 1999).

In addition to source credibility, studies have focused on message credibility. Three dimensions of message credibility have been identified: message structure, message content, and message delivery (Metzger et al., 2003). Message structure refers to the message organization. Disorganized messages are rated less credible than ones that are well organized. Message content influences credibility judgment because it has to do with the information quality, language intensity, and discrepancies in the message (Metzger et al., 2003). Information quality can be assessed based on the message's accuracy, comprehensiveness, currency, reliability, and validity (Rieh & Belkin, 1998), and whether the message is error free (Fogg & Tseng, 1999). Message delivery has to do with the way a message is presented by a source (Metzger et al., 2003). The more flaws in the source's delivery or in how the message is presented, the less credible the source and the message are perceived.

Credibility judgments are central to understanding how and why people rely on different types of health information presented on Facebook. Therefore, shortcuts people use when making these judgments are also essential to understand.

Heuristics in credibility judgments

Kahneman (2012) defined *heuristic* as "a simple procedure that helps find adequate, though often imperfect, answers to difficult questions." Some scholars use the term heuristic to refer to a mental shortcut (Fiske & Taylor, 1991) or simple rule (Statt, 1997). The idea of a heuristic emerged in Simon's (1972) theory of bounded rationality. The theory proposed that individuals did not always put their full cognitive effort into information processing. Under the limitation of time and knowledge, people make decisions or solve problems by setting criteria and searching for satisfactory alternatives. This kind of simplified mental process is similar to a heuristic method (Simon, 1972).

As noted earlier, people do not process every aspect of information they encounter. Researchers have examined how individuals assess online health information and shown that people often make judgments using mental shortcuts or heuristic cues (Cline & Haynes, 2001; Eysenbach & Köhler, 2002; Liao & Fu, 2014). Prybutok and Ryan (2015) found that individuals frequently rate their personal doctor, medical universities, and the federal government as trusted online sources of health information. These cues signal source credibility in terms of both trustworthiness and expertise.

Health information was rated more credible based on a given website's writing style and use of scientific references (Eysenbach & Köhler, 2002) as well as statistical evidence and information currency (Prybutok & Ryan, 2015). Further, health-related websites that had a professional design were rated as a credible source. Cline and Haynes (2001) found that individuals used peer reviews to evaluate online health information; this finding was supported by Liao and Fu (2014), who showed that peer

review or user review has a strong impact on individuals' credibility judgments about online health information. These cues help people discern message credibility in digital settings.

These findings about source and message credibility were confirmed by Sundar (2008), who proposed the metaphor of *cognitive miser* to describe how people rely on cognitive heuristics to manage the credibility challenges posed by the amount of information presented in digital media. To this end, researchers have proposed a variety of heuristic cues that individuals use when making credibility judgments (Cline & Haynes, 2001; Eysenbach & Köhler, 2002; Flanagin & Metzger, 2007; Metzger, Flanagin, & Medders, 2010; Sundar 2008). The following types of heuristics are identified as ones that are especially useful for understanding credibility judgments about health information on Facebook.

Reputation heuristic

Reputation heuristic refers to a group of cues that signify the reputation of websites or sources used to assess credibility, such as the name of a person or an organization, or the brand of products or service (Cline & Haynes, 2001). For example, people are more likely to trust information from a website or Facebook account of national media outlets than those from an unknown person (Flanagin & Metzger, 2007; Metzger et al., 2010).

Authority heuristic

This heuristic refers to a group of cues that signify a source's expertise or authority in a related area (Cline & Haynes, 2001; Eysenbach & Köhler, 2002; Sundar, 2008). Users are likely to rate a story as having higher credibility when an expert or official authority is identified as the source of information. Regardless of health topic sensitivity, sources such as medical or health professionals, medical or health organizations, and government agencies have been rated as more credible than media agencies, family members, and friends (Kim & Syn, 2016).

Expectancy violation heuristic

This heuristic refers to cues that fail to meet users' expectations or cues that did not conform with individuals' personal beliefs (Cline & Haynes, 2001; Flanagin & Metzger, 2007; Metzger et al., 2010). In other words, even if a website contained false information, it could be rated as credible if the site had an overall design that looked professional or was similar to the website of a media outlet. However, poor grammar or misspellings served as heuristic cues that reduced credibility (Flanagin & Metzger, 2007; Metzger et al., 2010).

Persuasive intense heuristic

This heuristic refers to cues that signify bias or hidden intentions in the content (Cline & Haynes, 2001; Flanagin & Metzger, 2007; Metzger et al., 2010). Commercial intention has frequently been found within Facebook content. Besides promoting health, health organizations have used Facebook for the purpose of organizational brand image management as well as marketing (Park, Rodger, & Stemmle, 2011). It is reasonable that, from time to time, Facebook users will encounter unsolicited health information that includes advertising. However, it is plausible to assume that this type of health information will be rated as less credible than information that is provided without advertising.

Bandwagon or endorsement heuristic

The bandwagon or endorsement heuristic refers to cues that are associated with the aggregation of other's beliefs or actions (Cline & Haynes, 2001; Flanagin & Metzger, 2007; Hajli et al., 2015; Metzger et al., 2010; Sundar & Nass, 2001). In other words, people tend to believe that information is credible when they see that others have believed it (Sundar, 2008). Cues under this heuristic can come from people who are both known and unknown to the person who is making the judgment. This heuristic suggests that people will often follow or believe what their family members, professors, and friends report they believe. Further, people sometimes make decisions based on unknown others in situations such as accommodation bookings and online purchases. On social networking sites, these cues are reported as numbers of reactions, shares, likes, retweets, and so on (Flanagin & Metzger, 2007; Metzger et al., 2010).

This information about different types of heuristics leads to the following research question:

RQ: Which types of heuristics do Facebook users in Thailand use to make judgments about health information credibility they found on Facebook?

Based on Chaiken's (1980) heuristic-systematic information processing model, Metzger (2007) posited that there are two types of strategies people use for making credibility judgments: analytic or systematic strategies, and heuristic strategies. When using the analytic or systematic strategy, people make more effort to scrutinize information by paying in-depth attention to all of the cues related to source, message, and medium. In contrast, people use a heuristic strategy when they quickly review these cues and make a decision based on only the surface quality of the information.

According to this dual-processing approach, there are two factors that help guide information processing and decision making: motivation and cognitive ability. In this study, we aimed to find out whether Facebook users with different level of health motivation and health e-mavens would make credibility judgment of health information differently.

Health motivation

Motivation triggers individuals' interest in certain topics and enables them to actively engage in activities and behaviors about those topics (Petty & Cacioppo, 1986). When it comes to information processing, motivated people are more likely to seek out information, and they are also more likely to be aware of the consequences of receiving low-quality information (Metzger & Flanagin, 2015). However, when people have low motivation, and especially when they are provided with limited information, they are more likely to make judgments using heuristic cues that will help them satisfy their goals for processing information (Chen & Chaiken, 1999).

Researchers have found health motivation to influence individuals' health information seeking behaviors (Moorman & Matulich, 1993; Rutten, Squiers, & Hesse, 2006). Health motivation is associated with individuals' likelihood to acquire online health information for themselves and for those close to them (Rutten et al., 2006). They search for health information either to improve their health condition, to keep staying healthy, to get healthier, or to get proper information for a medical decision that in the end will bring them back to a healthier status. Rutten and colleagues (2006) found that those

people diagnosed with cancer, or who have family members who have cancer, are more likely to be health information seekers than those who with no personal connection to a cancer diagnosis.

Although no existing research has shown the relationship between health motivation and credibility judgments about health information, the present study explores this relationship by examining the following hypothesis:

H1: Low health-motivated people are more likely than high health-motivated people to use (a) reputation heuristic, (b) authority heuristic, (c) expectancy violation heuristic, (d) persuasive intense heuristic, and (e) bandwagon heuristic in their credibility judgments about health information on Facebook.

Health e-mavens

The term *maven* is coined by Fieck and Price (1987) to refer to individuals who actively participate in information exchanges about a particular topic (Fieck & Price, 1987). Boster, Kotowski, Andrews, and Serota (2011) adopted this concept in a health communication setting. They identified *health mavens* as people who have a broad range of knowledge across health behaviors and health topics. Health mavens are happy to share health information with others. There is a possibility that health mavens may also be recognized by others as health advocates (Boster et al., 2011). Sun, Liu, and Krakow (2015) took this idea into online settings and coined the term *health e-maven*, which refers to "individuals who are consistently and actively involved with health information acquisition and information transmission on the webspace" (p. 1073). This definition implied that one may not need a degree in medicine, or health science to be health e-maven.

According to the characteristics of 'health e-mavens' proposed by Sun and colleagues (2015), Facebook should be an ideal platform where health e-mavens can be found. Facebook provides spaces where users can create a virtual community, such as a Facebook page, where members can post, share, discuss, and exchange health information. Numerous health-related pages can be found on Facebook at present. Health e-mavens can obtain health information intentionally and voluntarily on their news feed from their Facebook *friends*. At the same time, health e-mavens can share health information they have acquired with people on their friend list, which may include family members, relatives, their doctors, their bosses or colleagues, someone they happen to know from work, or someone who shares the same interests, accounts, or Facebook pages that they have followed. Some health e-mavens may even create their own health-related Facebook to disseminate health information.

As a source of online health information (Sun et al., 2015), health e-mavens gain health-related knowledge and experience from their engagement in online health information acquisition and transmission. This knowledge and experience presumably provide health e-mavens the cognitive ability to perform more depth scrutiny of credibility rather than judging the information based on heuristic cues.

Based on this knowledge of health e-mavens, the following hypothesis is proposed:

H2: Low health e-maven individuals use (a) reputation heuristic, (b) authority heuristic, (c) expectancy violation heuristic, (d) persuasive intense heuristic, and (e) bandwagon heuristic in credibility judgment of health information on Facebook more than high health e-maven individuals.

Thai Facebook users

The present study focuses on Thai Facebook users because Thailand was among the leading countries with a Facebook audience in the world (Bangkok Post, 2018). Also, Tongsawas (2002) revealed that Thais rely heavily on online health information, because it serves as a basic source of information for self-care and discussion with others, enables people to take proper care of their family members, and lessens risk or seriousness of health issues. Puypirom and In-Mor's (2016) results further showed that participants used the Internet as a resource of health information because they wanted to stay healthy, to update health information, and to seek health advice for themselves. Participants reported believing that online health information is accurate and reliable (Puypirom & In-Mor, 2016). Consequently, it is worth exploring Thai Facebook users'credibility judgments about health information they found on the platform.

Method

Participants and procedures

This study aimed to collect data from the sample size of at least 400 (rounded off the nearest whole). Numbers of sample was calculated using an equation developed by Cochran (1963).

Participants were 480 Thai Facebook users (142 males, 314 females, 21 preferred not to be identified, and 3 members of LGBTQ). Most of the participants had at least a bachelor's degree (*n* = 398, 82.92%), followed by those who finished undergraduate level (*n* = 74, 15.42%), secondary schools (*n* = 7, 1.46%), and primary school (*n* = 1, 0.21%). The majority of participants had used Facebook for at least five years (*n* = 462, 96.25%) and had used the application more than once a day (*n* = 392, 81.67%). Almost 80% of the participants (*n*= 382, 79.58%) spent less than 30 minutes at a time on the Facebook. Most participants (*n* = 462, 79.55%) identified their health status as ranging from fair to excellent. Specifically, participants assessed their health as *excellent* (*n* = 63, 13.13%), *mostly excellent* (*n* = 146, 30.42%), *somewhat good* (*n* = 172, 35.83%), *fair* (*n* = 81, 16.88%), *somewhat poor* (*n* = 17, 3.54%), and *mostly poor* (*n* = 1, 0.21%). None of them assess their health status as *poor*.

This study incorporated convenience and snowball sampling to recruit participants. An external link to an online questionnaire was distributed to participants via *Messenger*, a direct message application provided by Facebook users to communicate directly with their Facebook *friends*. Each recipient was asked to participate in the study as well as to assist by forwarding the link to at least five more people on their Facebook friends' list.

Questionnaire

Health motivation

Participants' health motivation was assessed using a 7-point Likert scale. The results were reported on a 7-point Likert scale ranging from '1 = strongly disagree', '2 = disagree', '3 = slightly disagree', '4 = neutral', '5 = slightly agree', '6 = agree', to '7 = strongly agree'. The scale was adopted from Moorman's (1990) study, which asked participants to indicate the extent to which they agreed with eight statements about their health motivations. For example, "I am concerned about health hazards and try to take action to prevent them". In the main study, a principal component analysis was performed on the eight items. The analysis resulted in one distinct component of five items with an

eigenvalue of 2.80, explaining 55.96% of the variance. Therefore, three items were dropped from the scale. The set of five items had a Cronbach's α = .803.

Health e-mavens

The health e-maven scale was adapted from the work of Sun et al. (2015). Participants were asked to rate 25 statements that asked about their activities and engagement in online health information seeking and sharing. For example, "Read someone else's commentary or experience about health or medical issues on online newsgroups, websites, blogs". Each question has seven options of answers ranging from 1 = never, 2 = rarely, 3 = occasionally, 4 = sometimes, 5 = frequently, 6 = usually, and 7 = always. A principal component analysis was performed on the 25 items. The analysis resulted in one distinct component of 16 items, which had an eigenvalue of 9.22 and explained 57.64% of the variance. The remaining nine items were dropped from the scale. The set of 16 items had a Cronbach's α = .948.

Credibility judgment

This part of the questionnaire was designed to assess participants' use of heuristics when making credibility judgments about health information on Facebook. Participants were asked to read one example of health information that looked as though it appeared on Facebook and then indicate to what extent they agreed with 26 statements about the heuristic cues used to make judgments of credibility. Participants responded to these statement with sever options of answers, ranging from 1 = strongly disagree to 7 = strongly agree. For example, "I make a credibility judgment by considering that the source is a renowned person or organization in a field of health. A principal component analysis was performed on the 26 items.

The principal components analysis resulted in five components with eigenvalues greater than one. The first component represented the reputation heuristic; it comprised three items on one factor with an eigenvalue of 2.19, which explained 73.02% of the variance. This set of items had a Cronbach's α =.814. The second component represented the authority heuristic; it comprised four items on one factor with an eigenvalue of 2.67, which explained 66.72% of the variance. This set of items had a Cronbach's α = .833. The third component represented the expectancy violation heuristic; it comprised five items on one factor with an eigenvalue of 2.74, which explained 54.63% of the variance. This set of items had a Cronbach's α = .784. The fourth component represented the persuasive intense heuristic; it comprised three items on one factor with an eigenvalue of 2.26, which explained 75.28% of the variance. This set of items had a Cronbach's α = .834. The fifth component represented the bandwagon heuristic; it comprised three items on one factor with an eigenvalue of 2.40, which explained 80.08% of the variance. This set of items had a Cronbach's α = .875.

Demographics

Participants responded to demographic questions regarding their gender, age, educational background, nationality, number of years using Facebook, frequency of Facebook access, average time spent on Facebook, and devices they used to access Facebook.

Health status

Finally, participants were asked to rate their health status by responding to a single item, "What is your current overall health?," which ranged from 1 = *poor* to 7 = *excellent*.

Data Analysis

The current study presented its results with 1) descriptive statistics; frequency, percentage, mean, and standard deviation, and 2) inferential statistics: Pearson's Correlation, one way analysis of variance (ANOVA).

Before applying one way analysis of variance (ANOVA) to identify any significant difference in credibility judgment between participants with different qualification (motivation, skills, engagement, cultural way of thinking, and perception), participants were divided into three groups (low, medium, high) by their position in the quartiles. Participants placed in the first quartile (the 1st to the 25th percentile of the total sample) were categorized into 'low' level group. Participants placed in the fourth quartile (the 76th percentile and above) were categorized into 'high' level group, while the rest (the 26th to 75th percentile of the total sample) were categorized into 'medium' level group.

Results

Heuristic uses in credibility judgment

Results of the ANOVA revealed that participants used all five types of heuristics when making credibility judgments about health information on Facebook, $F(2,477) = 197.174$, $p < .001$. A pairwise comparison showed that participants used the persuasive intense heuristic the most ($\bar{x}$ = 4.94, *SD* = 1.45), followed by authority heuristic ($\bar{x}$ = 4.58, *SD* = 1.32). These two heuristic types were used more than reputation heuristic ($\bar{x}$ = 4.09, *SD* = 1.35), expectancy violation heuristic ($\bar{x}$ = 4.02, *SD* = 1.21), and bandwagon heuristic ($\bar{x}$ = 3.27, *SD* = 1.54). There was no significant difference between the use of reputation heuristic and expectancy violation heuristic, but these two were used significantly more than the bandwagon heuristic.

Health motivation

Most of the participants reported being concerned about health hazards and being aware of health prevention. Overall, participants agreed with the items that measured health motivation. For example, "I am concerned about health hazards and try to take action to prevent them" ($\bar{x}$ = 5.95, *SD* = 1.12); "I try to prevent health problems before I detect any symptoms" ($\bar{x}$ = 5.76, *SD* = 1.30); and "I try to protect myself against health hazards I hear about" ($\bar{x}$ = 5.66, *SD* = 1.21).

Before analyzing Hypothesis 1, participants were divided into three groups (low, medium, high), using the average scores on the five-item health motivation scale and based on their quartile position. Participants who scored in the first quartile (1st to the 25th percentile of the total sample, *n* = 128) were categorized as low in motivation. Participants who scored in the fourth quartile (76th percentile and above, *n* = 111) were categorized as *high* in motivation. Those who scored in the middle two quartiles (26th to 75th percentile; *n* = 241) were categorized as having a *medium* level of motivation.

Hypothesis 1 proposed that low health-motivated people will use (a) reputation heuristic, (b) authority heuristic, (c) expectancy violation heuristic, (d) persuasive intense heuristic, and (e) bandwagon heuristic in credibility judgment

of health information on Facebook more than high health-motivated people use these heuristics. To test H1, a series of ANOVAs were conducted for each type of heuristic in which low versus high health motivation served as the independent variable and each of the heuristic types served as the dependent variables. Results showed significant differences in the use of heuristic types by low health motivated compared to high health motivated participants (see Table 1).

Table 1 Results of ANOVA and post hoc test on reputation heuristic, authority heuristic, expectancy violation heuristic, persuasive intense heuristic, and bandwagon heuristic use in credibility judgment of health information on Facebook between groups of participants with different level of health motivation.

Health motivation vs. Reputation heuristic					
Health motivation level	$\bar{x}$	S.D.	F	p	Post Hoc Test
Low (a) (n = 128)	4.28	1.29	2.346	.097	-
Medium (b) (n = 241)	4.09	1.36			
High (c) (n = 111)	3.90	1.36			
Total	4.09	1.35			
Health motivation vs. Authority heuristic					
Health motivation level	$\bar{x}$	S.D.	F	p	Post Hoc Test
Low (a) (n = 128)	4.66	1.32	.331	.718	-
Medium (b) (n = 241)	4.55	1.33			
High (c) (n = 111)	4.56	1.33			
Total	4.58	1.32			
Health motivation vs. Expectancy violation heuristic					
Health motivation level	$\bar{x}$	S.D.	F	p	Post Hoc Test
Low (a) (n = 128)	4.27	1.26	5.117	.006*	a>c
Medium (b) (n = 241)	3.99	1.18			
High (c) (n = 111)	3.78	1.18			
Total	4.02	1.21			

Table 1 Results of ANOVA and post hoc test on reputation heuristic, authority heuristic, expectancy violation heuristic, persuasive intense heuristic, and bandwagon heuristic use in credibility judgment of health information on Facebook between groups of participants with different level of health motivation. (continued)

Health motivation vs. Persuasive intense heuristic					
Health motivation level	$\bar{x}$	S.D.	F	p	Post Hoc Test
Low (a) (n = 128)	5.03	1.48	.661	.517	-
Medium (b) (n = 241)	4.87	1.41			
High (c) (n = 111)	5.01	1.52			
Total	4.94	1.45			
Health motivation vs. Bandwagon heuristic					
Health motivation level	$\bar{x}$	S.D.	F	p	Post Hoc Test
Low (a) (n = 128)	3.49	1.59	3.405	.034*	a>c
Medium (b) (n = 241)	3.29	1.48			
High (c) (n = 111)	2.98	1.55			
Total	3.27	1.54			

*p< 0.05

Three types of heuristics were used significantly more by low health motivated participants than by high health motivated participants: reputation heuristic, $F(2, 477) = 5.15$, $p < .05$ (low: $\bar{x}$ = 4.69, SD = 1.41 vs. high: $\bar{x}$ = 4.19, SD = 1.54); expectancy violation heuristic, $F(2, 477) = 8.56$, $p < .05$ (low: $\bar{x}$ = 4.36, SD = 1.30 vs. high: $\bar{x}$ = 3.78, SD = 1.22); and bandwagon heuristic $F(2, 477) = 7.78$, $p < .05$, (low: $\bar{x}$ = 3.67, SD = 1.59 vs. high: $\bar{x}$ = 2.92, SD = 1.56). Meanwhile, there was no difference between high and low motivated participants in the use of the authority heuristic or the persuasive intense heuristic. Therefore, H1a, H1c, and H1e were supported, but H1b and H1d were not.

Health e-mavens

Results showed that, overall, the participants did not qualify as health e-mavens. Most were passive recipients of health information, who mostly read other people's stories about health, but who rarely posted or shared health information on an online platform. Comparing the average mean score among the individual items, the item that said, "Read someone else's commentary or experience about health or medical issues on online newsgroups, websites, blogs" received was rated highest ($\bar{x}$ = 4.59, SD = 1.54), followed by "Read someone else's commentary or experience about health or medical issues on Facebook" ($\bar{x}$ = 4.46, SD =

1.57), and then "Watch video clips about health or medical issues on non-Facebook online platforms such as YouTube, or other websites" ($\bar{x}$ = 4.32, *SD* = 1.55).

Before testing Hypothesis 2, participants were divided into three groups (low, medium, high), using the average scores on the 16-item health e-mavens scale and based on their quartile position. Participants who scored in the first quartile (1st to the 25th percentile of the total sample, *n* = 118) were categorized as *low* in motivation. Participants who scored in the fourth quartile (76th percentile and above, *n* = 115) were categorized as *high* in motivation. Those who scored in the middle two quartiles (26th to 75th percentile; *n* = 247) were categorized as having a *medium* level of motivation.

H2 proposed that low health e-maven people use (a) reputation heuristic, (b) authority heuristic, (c) expectancy violation heuristic, (d) persuasive intense heuristic, and (e) bandwagon heuristic in credibility judgment of health information on Facebook more than high health e-maven people use these heuristics. To test H2, ANOVAs were conducted for each heuristic type, in which low versus high health e-mavens served as the independent variable and each of the heuristic types served as the dependent variables. The results showed significant differences in the use of each heuristic type by low health e-maven people compared to high health e-mavens (see Table 2).

Table 2 Results of ANOVA and post hoc test on reputation heuristic, authority heuristic, expectancy violation heuristic, persuasive intense heuristic, and bandwagon heuristic use in credibility judgment of health information on Facebook between groups of participants with different level of being health e-mavens.

Health e-mavens vs. Reputation heuristic					
Level of being health e-maven	$\bar{x}$	S.D.	F	p	Post Hoc Test
Low (a) (n = 114)	3.68	1.56	20.244	.000*	a<c b<c
Medium (b) (n = 250)	3.99	1.24			
High (c) (n = 116)	4.72	1.13			
Total	4.09	1.35			
Health e-mavens vs. Authority heuristic					
Level of being health e-maven	$\bar{x}$	S.D.	F	p	Post Hoc Test
Low (a) (n = 114)	4.28	1.49	13.052	.000*	a<c b<c
Medium (b) (n = 250)	4.48	1.28			
High (c) (n = 116)	5.09	1.10			
Total	4.58	1.32			

Table 1 Results of ANOVA and post hoc test on reputation heuristic, authority heuristic, expectancy violation heuristic, persuasive intense heuristic, and bandwagon heuristic use in credibility judgment of health information on Facebook between groups of participants with different level of being health e-mavens. (continued)

Health e-mavens vs. Expectancy violation heuristic					
Level of being health e-maven	$\bar{x}$	S.D.	F	p	Post Hoc Test
Low (a) (n = 114)	3.62	1.31	24.872	.000*	a<c b<c
Medium (b) (n = 250)	3.91	1.51			
High (c) (n = 116)	4.64	0.98			
Total	4.58	1.75			
Health e-mavens vs. Persuasive intense heuristic					
Level of being health e-maven	$\bar{x}$	S.D.	F	p	Post Hoc Test
Low (a) (n = 114)	4.58	1.75	5.483	.004*	a<b a<c
Medium (b) (n = 250)	4.99	1.39			
High (c) (n = 116)	5.20	1.18			
Total	4.94	1.45			
Health e-mavens vs. Bandwagon heuristic					
Level of being health e-maven	$\bar{x}$	S.D.	F	p	Post Hoc Test
Low (a) (n = 114)	2.68	1.50	38.481	.000*	a<b<c
Medium (b) (n = 250)	3.09	1.42			
High (c) (n = 116)	4.24	1.36			
Total	3.27	1.54			

*p< 0.05

However, low health e-mavens reported using each of the heuristics types less than high health e-mavens did: reputation heuristic, $F(2,477) = 20.244$, $p < .05$ (low: $\bar{x} = 3.68$, $SD = 1.56$ vs. high: $\bar{x} = 4.72$, $SD = 1.13$); authority heuristic, $F(2,477) = 13.052$, $p < .05$ (low: $\bar{x} = 4.28$, $SD = 1.49$ vs. high: $\bar{x} = 5.09$, $SD = 1.10$); expectancy violation heuristic, $F(2,477) = 24.872$, $p < .05$ (low: $\bar{x} = 3.62$, $SD = 1.31$ vs. high: $\bar{x} = 4.64$, $SD = 0.98$); persuasive intense heuristic, $F(2,477) = 5.483$, $p < .05$ (low: $\bar{x} = 4.58$, $SD = 1.75$ vs. high: $\bar{x} = 5.20$, $SD = 1.18$); and bandwagon heuristic, $F(2,477) = 38.481$, $p < .05$ (low: $\bar{x} = 2.68$, $SD = 1.50$ vs. high: $\bar{x} = 4.24$, $SD = 1.36$). Consequently, H2 (2a-2e) was not supported.

Discussion

The current study showed that Thai Facebook users relied on every group of heuristics—namely, reputation heuristic, authority heuristic, expectation violation heuristic, persuasive intense heuristic, and bandwagon heuristic—when making credibility judgments about health information they found on Facebook. These results reaffirmed the prior works of Flanagin and Metzger (Flanagin & Metzger, 2007; Metzger et al., 2010), which found these five groups of heuristics were used in the credibility judgment of online information. Moreover, the current study also showed new findings related to these heuristics in making judgments about health information on Facebook.

Among the five heuristic types, the persuasive intense heuristic was used most in the credibility judgment of health information on Facebook, followed by the authority heuristic. The reputation heuristic and the expectancy violation heuristic shared the third most-used heuristic position. The bandwagon heuristic was found as the least used heuristic.

The results from this study suggest that, to create credible health information posts on Facebook, any health-related content creators should communicate their expertise to their target audiences when posting on Facebook. Facebook pages or accounts with more likes or followers were perceived as having greater credibility about health information. Facebook content creators should avoid bias messages, especially ones that include commercial information in the posts. Any post with grammatical and typographic errors could signal a lack of credibility when judging health information. Boosted posts could get more interaction than non-boosted posts. However, cues such as numbers of likes, shares, and comments would not have as much impact on the credibility judgments on Facebook. As such, financial investment in a Facebook post may result in getting more people to see the post, but it would not boost the post's credibility.

Statistically, the significant difference in using heuristic between highly health motivated and lowly health motivated Facebook users appeared in groups of reputation heuristic, expectancy violation heuristic, and bandwagon heuristic. For low health-motivated Facebook users, who are likely to put less effort into their decision-making process, messages that enhance a source's reputation, conform to prior knowledge and experience, avoid bias and commercial intention, and do not have grammatical errors and misspellings may improve their credibility judgments about health information. When seeking to communicate credibility, health-related content creators should carefully address these aspects of their message.

The findings of this study also showed that high-level health e-mavens use all five types of heuristics more than those who are low-level health e-mavens. This is a surprising finding. However, a plausible explanation for this finding is that high-level health e-mavens do not rely on Facebook as their main source of health information. Therefore, they do not scrutinize the details of health information found on Facebook when making credibility judgments. A contrasting explanation could be that high-level health e-mavens are so attentive to health information that they attend to all the cues about the health information being communicated that all of the heuristics are assessed when making credibility judgments. Which explanation applies is worth further investigation, because it

will provide important information about how health e-mavens process information.

Nonetheless, the present study sheds light on health e-mavens and their credibility judgments about health information on Facebook. Further study should seek to understand more about how health e-mavens process health information, because they could serve as health advocates and play an important role in health promotion especially on social media platforms. And further study should examine how heuristics are used by people with low motivation to process information, especially when that information is false or misleading. Understanding the role of heuristics in information processing of health information on Facebook could play an important role in preventing people from adapting health behaviors that could be risky or even life threatening.

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