Fake News in the Online World: An Experimental Study on Credibility Evaluations of Fake News depending on Information Processing

Bachelor Thesis

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Abstract

With the increasing amount of exposed information on the Internet, upon which everybody can post something, the evaluation of credibility and trustworthiness becomes difficult. The current phenomenon fake news does not make the access to reliable information easier. Little research has been done on when people actually believe fake news. Because of the vast amount of information in the online world, which could make the time to evaluate every item limited, it is questioned whether this has an influence on credibility evaluations. This study aimed to examine this scientific gap by investigating the dependence of type of information processing on credibility evaluations of fake news. It was hypothesized intuitive processing leads to higher credibility evaluations than deliberative processing. An online sample of 534 participants was recruited. In either an intuition or deliberation condition, participants evaluated credibility of fake news items in an online questionnaire. Results showed that processing information in an intuitive way leads to lower credibility evaluations ($p < .05$). The hypothesis was not supported, which makes more research necessary.

Keywords: fake news, information processing, deliberation, intuition, credibility evaluations, valence, arousal, need for cognition, conscientiousness, numeracy

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Nowadays people are subjected to a lot of information. On a daily base, many new messages are posted on information sources such as the Internet. Thereby all sorts of information approach us, which could be reliable as well as unreliable. News about DJ Tiësto who, according to several sources, had died in a car accident or information about new features of the next iPhone reached us in a short time. Assaulted by probably unsolicited information, we live in a so called "information society" (Edmunds & Morris, 2000). In 1986, the information an individual was exposed to every day was equal to the content of 55 newspapers, while this was 175 newspapers per person in 2007 (Hilbert, as cited in Hilbert, 2012). This shows that the extent of exposed information has increased enormously in the past decades.

Obtaining information can be done in various ways. Besides printed information sources like newspapers or magazines, the Internet is currently an important source of information (Kim, Yoo-Lee, & Sin, 2011). Little effort is required to get access to information, which makes it very easy to get things known. In the past years social media became important for a lot of people, which can be seen in the finding that in 2012 people spent on average 1 hour and 36 minutes per day on social networking sites, while this was 1 hour and 49 minutes in 2016 (Mander, 2016). Regarding information obtaining, 97 percent of participants in a study use social networking sites as a source of information (Kim et al., 2011). Social media is even the main source for news for 47 percent of people (Reuters Institute for the Study of Journalism [RISL], 2016), which shows the important role of social media in obtaining information.

After obtaining, people process this information, which can be done differently. Information processing is defined as the assembling, making sense of, and the combining of

information (Tushman & Nadler, 1978). Dual-process theories distinguish two types of information processing (Frankish & Evans, as cited in Evans, 2010). According to them, one way to process information is fast and based on intuition, which is called Type 1. The processing focuses on the first emotional reactions (de Vries, Holland, & Witteman, 2008). It is about relying on gut feelings. Type 2 is slower and reflective. It is more about reasoning, deliberation, and cognition, which makes it more analytic (Frankish & Evans, as cited in Evans, 2010). Different theories agree with the notion that there are two ways of thinking that correspond to these two types (Evans, 2010). Kahneman (2003), for example, assigns intuitive thinking, which is effortless and based on emotions, to "System 1" and deliberation to "System 2" and regarding persuasion, the Elaboration Likelihood Model (Petty and Cacioppo, 1984) states a peripheral and central route for persuasion, which is based on low and high cognitive effort, respectively.

An important consequence regarding the processes of information obtaining and processing, is evaluating the information. The distinction between different kinds of information seems hard to make, which is shown in the finding that a lot of students have trouble with recognizing the difference between an advertisement and a real news story (Stanford History Education Group, 2016). Regarding judging the information and information source, it is questioned how people make evaluations about for example the believability of the information source (Westerman, Spence, & Van Der Heide, 2012). According to Chen, Conroy, and Rubin (2015), the judging of the credibility and trustworthiness of information becomes very difficult nowadays, which is caused by the vast amount of online information. The extent of reliable information on social media is usually doubtful (Kim et al., 2011), which especially might be possible due to the fact that everyone can post something on the Internet.

A phenomenon that might has to do with the increased difficulty to evaluate information because of the vast amount of information in the online world, refers to the current topic fake news. According to Allcott and Gentzkow (2017) fake news can be defined as "news stories that have no factual basis but are presented as facts" (p. 5). Nowadays fake news is a much debated topic which is mainly present on social media. The fact that this phenomenon becomes more important emerged in Australia, where fake news has been chosen as the 'word of the year' in 2016 (NU.nl, 2017). The important presence is shown in research of Silverman (2016) who found that in the last three months of the presidential campaign in the US in 2016 fake news stories were more broadly shared on Facebook than stories from media such as New York Times. Furthermore, about 75% of the time American adults actually believe fake news headlines (Silverman and Singer-Vine, 2016). Regarding the impact of fake news on decisions and choices, different statements were revealed. For example, according to Allcott and Gentzkow (2017), fake news barely influenced the results of the presidential elections in the United States in 2016, while German politicians state that publishing fake news should be punishable (Nederlandse Omroep Stichting [NOS], 2016).

Due to those different statements regarding the impact of fake news, it is questioned when people actually believe fake news. A consequence of the vast amount of online information is the fact that people simply do not have time to observe all the information. Time for evaluation seems to be an important factor which determines which kind of the two earlier discussed types of information processing is used (Kahneman, 2003; McMackin & Slovic, 2000). According to them, when time to evaluate the information is limited, people tend to rely on their intuitive reactions. However, they state deliberative processing tend to occur when people take the time to evaluate information. This corresponds to Rusou, Zakay and Usher (2013), who found that reaction time was longer for deliberative judgments than for intuitive judgments. Because people simply do not have enough time to check everything

in this society with a lot of exposed information, it could be possible that intuitive thinking rather leads to higher credibility evaluations than when they are able to observe the whole news article. It may be that having enough time leads to better evaluations about reliability of news, simply because there are more possibilities to distinguish reliable from unreliable information. Therefore, intuitive thinking, instead of deliberative thinking, might lead to less adequate evaluations regarding the credibility of information of fake news.

Not only credibility evaluations of fake news might be related to the type of information processing. When seeing news items, this experience triggers an emotional response, like many other events in our lives (Kensinger & Schacter, 2006). They stated valence and arousal are often used to classify emotional experiences. The first mentioned describes the event in a way ranging from negative to positive, while arousal describes the intensity of an event, ranging from calming to exciting (Lang, Greenwald, Bradley, & Hamm, 1993). Because processing information in an intuitive way focuses on the first emotional reactions (de Vries et al., 2008), it could be the case that experienced arousal is higher in intuitive processing rather than in deliberative processing. Furthermore, it might be possible that because of the focus on the first emotional reactions, more extreme values regarding valence play a role in intuitive processing, which means people describe the message of a fake news item either totally negative or totally positive.

Besides types of information processing, personality characteristics could play a role in when people actually believe fake news. Firstly, the need for cognition could be an important factor. This refers to an individual's inclination to think and enjoy thinking (Cacioppo & Petty, 1982). Cacioppo, Petty, and Morris (1983) found that people who score high in need for cognition stated more experienced cognitive effort when considering a message than people low in need for cognition. It could be expected that when people really think about what is said in a news article, they rather distrust information which looks or

sounds fake. Secondly, because the personality trait conscientiousness consists of for example the facets competence, achievement striving, self-discipline and deliberation (Costa & McCrae, 1992), it is expected that a high score on conscientiousness may be related to carefully observing information. Conscientious people are generally thorough and hard-working individuals (Murphy & Lee, 1994). Therefore, they might have a tendency to be critical towards news articles and rather distrust information. Thirdly, numeracy could play a role. Numeracy could be defined as "the ability to use and understand numbers in daily life" (Rothman et al., 2006, p. 392). Koetsenruijter (2011) found that credibility of a news item is related to the amount of numbers used in it. The perceived credibility is higher when more numbers are used (i.g. absolute values and percentages, expressed in numerical values, e.g. '6' instead of 'six') instead of words (e.g. 'some' or 'a lot'). It might be possible that this effect is greater for people who prefer and are good in working with numeric information and therefore score high on numeracy. If so, there will be a positive relationship between numeracy and credibility evaluations of fake news with numbers in it, what makes people with high score on numeracy have a tendency to rather believe a news item that contains numeric information.

Although fake news is currently an important phenomenon in the online world, little research has been done on when fake news is being considered as credible. This paper addresses this gap by examining the dependence of type of information processing, which is either intuitive thinking or deliberative thinking, on credibility evaluations of fake news. Furthermore, this paper focuses on type of information processing and the extent of experienced arousal and valence due to seeing fake news. Lastly, individual differences in believing fake news is investigated. The relationships between perceived credibility of fake news and three personality characteristics, which refer to need for cognition, conscientiousness, and numeracy, are examined.

Firstly, it is hypothesized that fake news will be evaluated more credible when observing the information in an intuitive way rather than based on deliberation. Secondly, it is expected that fake news processed intuitively leads to higher scores on arousal and to more extreme scores regarding valence than when processed in a deliberative way. Thirdly, it is hypothesized that there will be a relationship between credibility evaluations of fake news and three personality characteristics, which refers to an expected negative relationship between these evaluations and both need for cognition and conscientiousness. In fake news with a lot of numerical support, high score on numeracy might relate to high scores on perceived credibility. In case of fake new items without numerical support, no relationship is expected.

Method

Participants

In total 534 times people started, of which 270 people completely finished the study (64 male, 24.2%; 200 female, 75.8%). The age ranged between 15 and 66 years (M_{age} = 25.5, SD_{age} = 10.76). Participants were recruited from the network of the researcher. Because the focus was on Dutch news items, only Dutch people were asked to voluntary participate in the study to ensure problems with language would not play a role. Of the participants who filled in their education level, 34% (N = 90) was highly educated (higher professional education and university education), 59% (N = 159) was moderately educated (intermediate vocational education, higher general secondary education or pre-university education), and 7% (N = 19) was lowly educated (primary school or lower general secondary education). Ninety-four percent (N = 253) of the participants who reported their knowledge of the Dutch language stated they are familiar or very familiar with it. Considering the number of included participants in measuring the main outcome variable (N = 277), this study has 90% power (post hoc, $\alpha = 0.5$, $d = 0.4$).

Experimental design

Two conditions, based on intuitive thinking and deliberative thinking, were conducted in this study. Assignment was randomly. The manipulation had to do with time to view the news articles, which was restricted to 15 seconds in the intuition condition and free to choose with a minimum of 25 seconds in the deliberation condition, to avoid them going to the questions without paying some attention to the news items. Also an extra multiple choice question was stated in the deliberation condition, to let people in this condition reflect on what they just read. The independent variable in this study was the type of information processing. Perceived credibility of fake news, valence of the article and experienced arousal were dependent variables.

Materials

News items. To reduce the burden of the survey on participants, the news items were restricted to three. Dutch news items, of which the first and third one were fake, were used in the online survey. News items were collected by searching on the Internet for fake news websites. To check whether the fake news articles were actually fake, the title and subject were searched multiple times on Google. They were considered to be fake if items were not confirmed by reliable sources. If the distinction between real and fake news would be easy to make, participants may classify every article as fake. To avoid this, one authentic article was added as a stimulus. Furthermore, to investigate whether numeracy is related to higher credibility evaluations of news, numeric information was used in the first fake news item (e.g. “5 euros”, “1,50 euros”). In the last one, no numeric information was used and therefore information was described in words (e.g. “a lot of time”, “twenty minutes”, “double good news”, “a third of the price”). The news items can be found in the Appendix.

Valence and arousal ratings. Valence and arousal were measured using a self-reported measurement based on Self-Assessment Manikin (SAM) (Lang, 1980, as cited in

Bradley & Lang, 1994). Valence was measured by asking about the feeling about the news item. Arousal was measured by asking about the feeling participants had after reading the news item. Both were judged on a 9-point scale (1 = *negative feeling* or *low arousal or calm* and 9 = *positive feeling* or *high arousal or excited*) and were accompanied with visual images.

Credibility. Credibility was measured using clarity, accuracy, trustworthiness, and believability scales, based on the credibility of precision journalism scale of Mosier and Ahlgren (1981). In total 7 items of this semantic differential scale were translated by the researcher from English to Dutch, which was confirmed by a second translator (*poorly written - clearly written, inaccurate - accurate, unbelievable - believable, unclear - clear, incorrect - correct, and unconvincing - convincing*, and *untrustworthy information - trustworthy information*). Items were answered on a 7-point scale (e.g. ranging from poorly written to clearly written). Cronbach's alpha coefficient for three measurements in this study ranged between .869 and .906, which indicates good to excellent internal consistency.

Need for cognition. Need for cognition was measured with an 18-item Dutch need for cognition scale, which was created and earlier used by two independent translators and confirmed by two reviewers. It was based on the scale of Cacioppo, Petty, and Kao (1984). Statements regarding need for cognition (e.g. "I prefer my life to be filled with puzzles I must solve") were answered on a 7-point scale (1 = *strongly disagree* and 7 = *strongly agree*). Nine of the items were reversed to avoid response tendencies. Cronbach's alpha coefficient was .805 in this study, which indicates good internal consistency.

Conscientiousness. Conscientiousness was measured using a Dutch translation of the conscientiousness subscale of the Big Five Inventory (Denissen, Geenen, Van Aken, Gosling, & Potter, 2008). In total, nine statements regarding conscientiousness (e.g. "I am someone who perseveres until the task is finished") were answered on a 5-point scale (1 = *strongly*

disagree and 5 = *strongly agree*). Cronbach's alpha coefficient was .779 in this study, which indicates fairly good internal consistency.

Numeracy. Numeracy was measured by using the Subjective Numeracy Scale (SNS) of Fagerlin et al. (2007). Eight questions were translated from English to Dutch by the researcher, which were confirmed by a second translator. The first four questions measure numerical ability (e.g. "How good are you at calculating a 15% tip?"), while the other four questions measure preferences for numerical information or information in words (e.g. "How often do you find numeric information useful?"). Answers could be given on a 6-point scale. One of the items was reverse coded. Cronbach's alpha was .842 in this study, which indicates good internal consistency.

Procedure

Qualtrics was used to set up the online questionnaire. Participants were asked to voluntary participate in the study to help the researcher with the Bachelor's thesis. They were instructed their participation would take about 10 minutes, that the study had a focus on news articles and that they had the possibility to stop at any time. They were randomly assigned to either the intuition condition (N = 224) or the deliberation condition (N = 218). In both conditions, the same three news items were shown. In the intuition condition, participants were asked to look at the news items with the instruction the items were shown for a short time and that it was just to give them an impression. After each news item, which was shown for 15 seconds, participants were automatically redirected to a short questionnaire regarding valence of the article, experienced arousal and perceived credibility of the news item. In the deliberation condition, the participants were asked to read the articles very carefully. When they finished reading the news item, they were able to continue the survey by themselves after 25 seconds. Before answering the questions regarding valence, arousal and credibility, they were also asked to answer a multiple choice question about what was being said in the

news item. Subsequently, questions were asked regarding need for cognition, conscientiousness and (subjective) numeracy. Furthermore, they were asked whether they knew and used some of the source-websites and whether they thought the news items were real or fake. Lastly, participants filled in some demographic questions and were thanked for participating.

Data analysis

Data analysis was done using SPSS version 22. For each variable, all available data were included in analysis, irrespective of whether the questionnaire was totally finished or not. Items were recoded when needed and mean scores per scale were calculated. Outliers regarding time watching the news items were removed from analysis when score deviates two times the standard deviation. Because it is desirable to draw a general conclusion concerning fake news, mean scores on arousal and perceived credibility of the two fake news articles together were calculated. Assumed that the messages can be different for each news item, which can be positive or negative, valence scores were used per fake news item. This is done because when taking mean scores of valence of two fake news articles together, this can cause unusable mean scores when measuring extreme values regarding valence. Reliability of the scales was determined by Cronbach's alpha. Regarding the manipulation check of time watching news items, an independent samples *t* test was conducted. Besides calculating descriptive statistics (means, standard deviations, frequencies), independent samples *t* tests (two-tailed) were conducted to evaluate the hypotheses that fake news would be evaluated more credible and would evoke higher arousal and extreme values regarding valence when processing the information in an intuitive way rather than based on deliberation. Also a two-way contingency table analysis was conducted to evaluate whether there was a difference in number of times correctly stating fake news to be fake between people in the intuition condition and people in the deliberation condition. Bivariate correlation analyses (Pearson's)

were calculated to examine the relationship between perceived credibility and need for cognition, conscientiousness, and numeracy. Furthermore, one-way analyses of variance (ANOVA, two-tailed) were conducted to evaluate whether scores on need for cognition, conscientiousness and (subjective) numeracy differ among people with different number of correct estimations of fake news as being fake. For this, participants were divided into three groups according to their number of correctly estimated fake news items to be fake, which was either zero, one or two.

Results

Of the 534 times people started, one person was removed from analysis due to reported incorrect answers by the person himself. Of all the participants in the intuition condition, 49% (N = 109) failed to complete the whole study, while this was the case for 29% (N = 63) in the deliberation condition ($\chi^2(1, N = 441) = 17.85, p < .001$). In total 270 people completely finished the study.

Regarding familiarity with sources of the items, 3% of the people (N = 7) stated they knew and used Journaalflash, while this was the case for 38% (N = 103) for LindaNieuws and 67% (N = 179) for RTLNieuws. Thirty-two percent (N = 85) did not know and use some of these sources.

A significant difference was found in time watching the news items between the two conditions, which refers to the manipulation check. Of people who completely finished the questionnaire, people in the deliberation condition significantly spent more time watching the news items than people in the intuition condition (item 1: $t(150.09) = -15.73, p <.001$; item 2: $t(151.04) = -16.44, p <.001$; item 3: $t(147.10) = -24.78, p <.001$), see Table 1.

Table 1

Means and Standard Deviations Time Watching Items When Study Totally Finished

	Intuition		Deliberation		
	N	*M* (*SD*)	*N*	*M* (*SD*)	*p*
News item 1	111	16.29 (0.61)	151	69.67 (41.71)	<.001
News item 2	112	16.21 (0.43)	152	76.68 (45.35)	<.001
News item 2	114	16.29 (1.69)	147	80.53 (31.38)	<.001

Note. Mean time in seconds.

The manipulation regarding the extra multiple choice question to let people in the deliberation condition reflect on what they read, led to 97% (*N* = 207) correct answers for the first item, 98% (*N* = 172) for the second item and 98% (*N* = 151) correct answers for the last news item. Assumed that participants did not read the articles carefully when answering at least one question incorrectly, these participants were removed from analyses that focus on information processing (*N* = 10).

As shown in Table 2, for each news item there was no difference found in correctly stating news to be fake or authentic between people in the intuition condition and people in the deliberation condition. Overall, no difference was found in number of times correctly stating fake news to be fake between people in the intuition condition and people in the deliberation condition ($\chi^2(1, N = 271) = 4.24$, $p = .120$).

Table 2

Percentage correctly Stated News Items to be Fake or Authentic

	Intuition (*N* = 117)	Deliberation (*N* = 154)		
	% (*N*)	% (*N*)	χ^2	*p*
News item 1	76 (89)	67 (103)	2.72	.099
News item 2	80 (94)	79 (121)	0.13	.721
News item 3	58 (68)	51 (79)	1.25	.264

Note. N = 271.

Information processing and credibility evaluations

Regarding the first hypothesis of this study which refers to the hypothesis that fake news would be evaluated more credible when observing the information in an intuitive way

rather than based on deliberation, people in the intuition condition (M = 4.20, SD = 0.88) evaluated fake news on average significantly less credible than those in the deliberation condition (M = 4.48, SD = 0.95, $t(275) = -2.53$, p = .012 (see Figure 1).

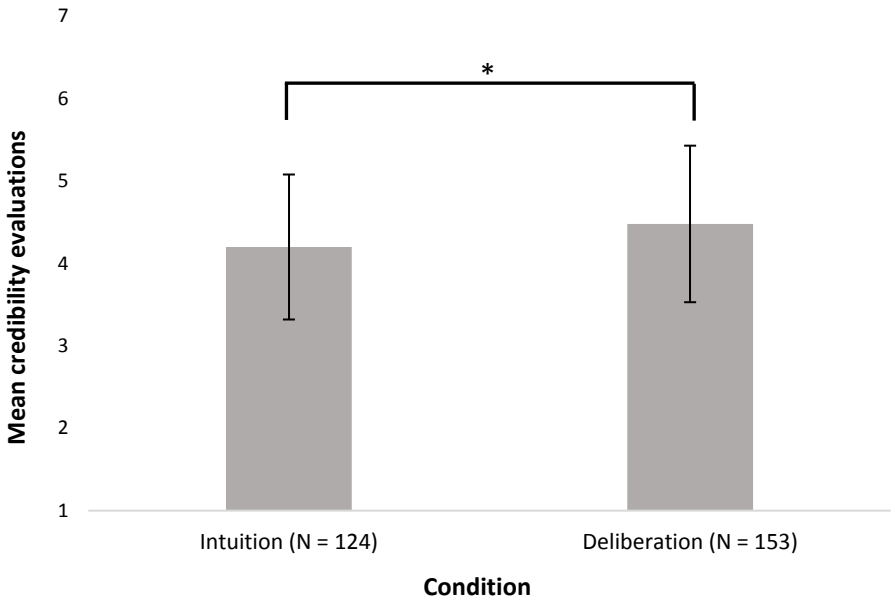

Figure 1. Mean credibility evaluations of fake news for each condition. Error bars represent standard deviations.
* $p < .05$.

Information processing and valence and arousal

Regarding the second hypothesis that fake news processed in an intuitive way leads to higher scores on arousal and more extreme scores on valence, there was no difference in arousal between intuition condition (N = 131, M = 4.90, SD = 1.29) and the deliberation condition (N = 154, M = 5.00, SD = 1.26), $t(283) = -.59$, p = .555. For the first fake news item, there was no difference in valence between people in the intuition condition (N = 182, M = 4.24, SD = 1.59) and those in the deliberation condition (N = 201, M = 4.26, SD = 1.79), $t(380.80) = -.130$, p = .897. For the second fake news item, also no difference between the intuition condition (N = 129, M = 5.42, SD = 1.58) and the deliberation condition (N = 157, M = 5.69, SD = 1.73) was found, $t(284) = -1.36$, p = .175.

Individual differences and credibility evaluations

Need for cognition. Mean score on need for cognition of all participants was 4.6 (*SD* = 0.71, *N* = 268) and scores ranged from 2.5 and 6.4. No correlation was found between need for cognition and perceived credibility of fake news, r = -0.041, p = .513. In addition, there was no difference in need for cognition scores for the three groups which were based on number of times correctly estimating fake news to be fake, $F(2, 258) = 0.02$, p = .983.

Conscientiousness. Mean score on conscientiousness of all participants was 3.7 (*SD* = 0.62, *N* = 266) and scores ranged from 2.2 and 5.0. No correlation was found between conscientiousness and perceived credibility of fake news, r = -0.049, p = .436. In addition, there was no difference in conscientiousness scores for the three groups which were based on number of times correctly estimating fake news to be fake, $F(2, 262) = 0.17$, p = .842.

Numeracy. Mean score on subjective numeracy of all participants was 4.2 (*SD* = 1.01, *N* = 270) and scores ranged from 1.3 and 6.0. A significant small positive correlation was found between the credibility evaluations of a fake news article which included numeric information (article 1) and subjective numeracy, r = 0.151, p = .014. Furthermore, a significant small positive correlation was found between the credibility evaluations of a fake news article which not included numeric information (article 3) and subjective numeracy, r = 0.147, p = .016. Overall, a small positive correlation was found between credibility evaluations of fake news and subjective numeracy, r = 0.197, p = .001. In addition, there was no difference in numeracy scores for the three groups which were based on the number of times correctly estimating fake news to be fake, $F(2, 267) = 0.03$, p = .973.

Discussion

Since little research has been done concerning when the current topic face news is considered as credible, this study aimed to examine this scientific gap with the focus on type of information processing. Regarding the hypotheses that fake news will be evaluated more

credible and will evoke higher arousal and more extreme values regarding valence when observing the information in an intuitive way rather than based on deliberation, it was found that fake news is evaluated more credible when deliberative processing. No difference was found in experienced arousal and valence. Regarding the personality factors that might correlate with credibility evaluations of fake news, there was no relationship found between credibility evaluations of fake news and need for cognition as well as between these evaluations and conscientiousness. A small positive relationship was found between credibility evaluations and numeracy, which was not depending on the presence of numerical information. Therefore the hypotheses were not supported.

The first discussed result, people who process the news item in an intuitive way evaluated fake news less credible than those who deliberate, was unexpected. This result is contrary to the expectation, which was based on previous studies which stated that deliberative thinking is more time consuming (e.g. Kahneman, 2003), that this kind of information processing leads to better evaluations about the reliability of fake news. It was expected that more time to evaluate is related to more possibilities to distinguish reliable from unreliable information. Regarding this study, it might be possible that participants in the intuition condition were aware of the research setting and therefore reacted more carefully in indicating their credibility evaluations. When they had the suspicion they had to indicate a correct evaluation based on just a short time watching the items, they could have answered more restrained to avoid making unjustified credibility evaluations. Critical thinking is seen as an educational ideal (Norris, 1985) and therefore desirable in this society. It could be they wanted to show they form an impression in a critical way, resulting in lower credibility evaluations.

This possible explanation could be linked to the result that the intuition condition had significantly more dropouts than the deliberate condition. It could be the case that people who

saw the news items for a short time thought they just did not get enough time to evaluate the credibility in a way they think they do it critically. Not finishing the questionnaire might be a consequence. This could have an influence on this study if the dropouts were only people who did not prefer to base their evaluations on their first impressions. Therefore, it is possible that especially people that did not mind giving their first impression participated in the intuition condition. For future research it might be better to emphasize more strongly that the focus was on first impressions in which there are no good and bad answers. In addition, when the reason for dropout in the intuition condition has to do with distraction which makes the participants not able to look at the news item because it was shown briefly, a more controlled (lab) environment would be better to avoid this.

Additional to the results regarding the three hypotheses, another result of this study refers to the finding of no difference in stating fake news correctly as being fake between the types of information processing. In this study, this indicates that when participants had to tell whether a news item was fake or not, their answer did not depend on the type of information processing. This is contrary to the possible expectation that fits the hypothesis regarding credibility evaluations, which refers to the assumption that more time for evaluation, at which deliberative processing plays a role (Kahneman, 2003), is related to more possibilities to check the information and therefore making better conclusions regarding when news is fake. In this study it could be possible that the questions of indicating the news items as being fake or authentic triggered the participants to think that there is a possibility the news item could be fake. Therefore, participants who processed the information intuitively might also started thinking about what they just read in a short time. If so, they reflected on what they saw, which is part of deliberative thinking (Kahneman, 2003). As a result, the difference regarding information processing between the two conditions for these questions disappeared, which might explain the results.

Three possible limitations of this study can be discussed. One of them refers to the operationalization of the types of information processing. Because filling in the questionnaire was not done in a controlled situation, it could not be checked whether people actually inspected the news in a deliberate way. Therefore, it is not guaranteed that the information processing went differently. However, people in the deliberation condition significantly spent more time watching the news items and the average watching time was well above the minimum of 25 seconds. Therefore, it can be presumed that they had and used the possibility to give their ideas about correct credibility evaluations, assuming that people in the deliberation condition also want to look critical. Therefore, this limitation is expected to be limited.

A second limitation refers to the use of news items, which was limited to two for fake news. Although the restriction to two items might reduce the burden of the participants, the use of just two fake news articles could make the study to credibility evaluations of general fake news less reliable. It could be possible that other items would induce other results, possible causing the hypotheses regarding fake news supported. Therefore, it could be better to use more news items to prevent the results depending on those two news items, to get more insight into fake news.

Regarding numeracy, a subjective numeracy scale was used to measure this characteristic, which refers to a third limitation. The hypothesis that the positive relationship between amount of numbers in an article and credibility found by Koetsenruijter (2011) was greater for people who prefer and are good in working with numeric information was not supported, because a small positive relationship was found between credibility evaluations and fake news with as well as without numerical support. It could be the case that this result had more to do with another characteristic than just numeracy. Because the Subjective Numeracy Scale (SNS) of Fagerlin et al. (2007) measures how people think about themselves

regarding numeracy, it could be the case that positive thoughts play a role. It might be possible that people who are thinking more positively could see their skills more positive as well as they are more positive regarding the credibility evaluations. Therefore, it would be better to measure numeracy with an objective measurement instead of a subjective one.

Because fake news in the online world is a current phenomenon to which little research has been done, this study aimed to examine this scientific gap by being the first to explore when people believe fake news, in which this study focused on the dependence of type of information processing. To investigate whether and, if so, when fake news influences people and maybe their decisions, it might be good to know when people see fake news as credible. For future research, it recommended to take the aforementioned limitations into account. It would be better to implement the study in, for example, a laboratory, to have more control over the participants. In addition, the number of fake news articles could be increased to avoid the results that were found depending on the items used in this study. For research on when people actually believe fake news, in which this study focused on type of information processing and three personality characteristics, it might be desirable to examine whether other person characteristics, such as age or use of Facebook, have an influence on believing fake news. Besides the type of information processing, there could be a lot more factors that might have an influence on believing fake news, which makes more research desirable.

Concluding, this study has not contributed enough in research to when people believe fake news, focused on type of information processing. More research has to be done. When we want to make right judgments and good decisions regarding the increasing amount of information in the online world, credibility evaluations are of great importance, especially in this era in which everybody can post something on the Internet. We do not want to be moved by news about DJ Tiësto who, according to several sources, had died in a car accident, while

this was just fake news. People do not like to be influenced by incorrect evaluations. Because after all, we all want to use reliable information only.

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Appendix

30 JUNI 2016

Toeslag voor ouders die met kinderwagen reizen

Ouders die met een kinderwagen gaan reizen moeten een nieuw product op hun OV-chipkaart zetten. Daar zijn alle vervoerders het over eens geworden.

"De ouders die met een kinderwagen met de bus reizen nemen een plek in beslag die voor rolstoelgebruikers bestemd is. Plus het kost ook gewoon veel meer tijd voor die mensen klaar zijn met instappen en inchecken, dan mensen die geen kinderwagen meenemen. Dat zijn allemaal factoren wat we besproken hebben. De toeslag die de ouder extra betaalt bedraagt voor de trein 5 euro per rit en voor de bus €1,50 per rit." Aldus Connexxion-topman Bart Schmeink.

"Wij zijn hiertoe gekomen, doordat er wel een toeslag bestaat voor fietsen en honden en niet voor kinderwagens. Daarom hebben we dit besproken en zijn we hiertoe gekomen. Overigens geldt er nu ook een verbod op reizen tijdens de spitsuren met een kinderwagens. Buggy's overigens gewoon mee, indien ingeklapt." Voegde Arriva's CEO Anne Hettinga er aan toe.

"Wij snappen het wel. Kijk, als je een fiets meeneemt de trein in, dan betaal je daar 6 euro per dag toeslag voor en voor een hond betaal je €3,50 per dag toeslag voor. De meeste mensen in de bus die ergeren zich ook aan dat het met die kinderwagen altijd zo lang duurt voor ze in- en uitgestapt zijn. Dus wij van Vereniging ROVER begrijpen die toeslagen wel." Aldus voorzitter Arriën Kruyt.

Note. Fake news item. Retrieved from: https://journaalflash.wordpress.com/2016/06/30/toeslag-voor-ouders-die-met-kinderwagen-reizen/

ELKE DAG KOUD DOUCHEN LEIDT TOT MINDER ZIEKTE

Het is even doorbijten, maar koud douchen is écht goed voor je. Uit onderzoek van het Academisch Medisch Centrum (AMC) blijkt dat zo'n dagelijkse opfrisser zorgt voor een betere weerstand.

16.09.2016 | 10:20 uur | Justine Wouterson

Het onderzoek werd gehouden onder ruim drieduizend vitale vrijwilligers.

POSITIEF EFFECT

"De uitkomst is dermate interessant dat we verder onderzoek willen doen naar de werkzaamheid", zegt onderzoeker Geert Buijze in *Het Parool* over de resultaten. Duidelijk is dat een plens koud water een positief effect heeft op het afweersysteem, maar welke dat precies is, daar zijn de onderzoekers nog niet over uit. Buijze: "We hopen het biologische effect van koud douchen op het lichaam te meten in de hersenactiviteit."

KOUD KUNSTJE

Voor het onderzoek werden de vrijwilligers in vier groepen verdeeld: één groep douchte warm, de andere drie douchten dagelijks dertig, zestig of negentig seconden koud. De deelnemers hielden zelf bij hoe ze zich voelden.

SNELLER BOVEN JAN

De mensen die koud douchten, bleken zich niet minder ziek te voelen, maar wel waren ze minder ernstig ziek en werden ze sneller weer beter dan de warm douchende mensen. Dat had als gevolg dat zij zich minder dagen (maar liefst 29 procent) ziek meldden op hun werk. Uit het onderzoek is ook gebleken dat het niet uitmaakt hoe lang je koud douchet.

BRRRR

Eigenlijk moeten we er niet aan denken, maar misschien is het – met het oog op de herfst die nu toch écht voor de deur staat – geen slecht idee om de koudwaterkraan 's morgens even kort open te zetten.

Let op: Buijze benadrukt dat de conclusie van het onderzoek niet geldt voor mensen met ernstige gezondheidsklachten.

NIEUWS | GEZOND | LIFESTYLE

Bron: Het Parool | Foto: ANP

Note. Authentic news item. Retrieved from: http://www.lindanieuws.nl/nieuws/elke-dag-koud-douchen-leidt-tot-minder-ziekte/

24 oktober 2015 16:12

In onbemand restaurant Foodsy kook je zelf

0 0 6

© Foodsy

Het is een restaurant zonder koks, bediening of kassa. Binnenkort opent in Amsterdam het restaurant Foodsy, waar je zelf aan de slag mag.

Er zijn geen koks, serveersters, barmannen of gastvrouwen bij Foodsy, dus je kunt er goedkoop eten. 'Hou je fooi maar', staat te lezen op de site.

Reserveren voor Foodsy kan niet, want het restaurant is niet telefonisch bereikbaar. Oprichter Erwin Sander is er "in principe alleen om de deuren te openen en te sluiten". Helemaal aan je lot wordt je niet overgelaten; je krijgt een menu en via een stickersysteem kun je de juiste ingrediënten voor je gerecht vinden. Gerechten waar veel tijd voor nodig is, zet Sander klaar. De recepten zijn vooral eenpansgerechten, die binnen twintig minuten gemaakt kunnen worden. "Ook met weinig kookervaring kun je heel gemakkelijk je eigen meester-gerecht bereiden." Verder hangen er door de hele zaak kaarten met uitleg, bijvoorbeeld over hoe je een biertje tapt of koffie zet.

Personeel bottleneck voor restaurants

Erwin Sander, een topkok die eerder bij sterrenrestaurants Noma, Arzak en Ciel Blue werkte, verbaasde zich erover dat mensen tegenwoordig zoveel zelf doen, maar dat er nog geen restaurant bestond waar je zelf aan de slag kunt. "We kweken onze eigen groenten, brouwen ons eigen bier en ook in de keuken worden we steeds handiger. Daarom denk ik dat de tijd er rijp voor is. In Foodsy is de gast kok, ober, barman of -vrouw en ja: ook afwasser", vertelt hij.

In de afgelopen jaren heeft Sander meerdere restaurants opgezet, maar hij vond het inhuren van goed personeel een van de grootste bottlenecks. "Je bent veel tijd en geld kwijt aan trainen, opleiden en goede afspraken maken." Dat probleem heeft hij bij Foodsy niet meer, en dat is dubbel goed nieuws, want geen personeel scheelt ook nog eens eenderde op de prijs van je etentje.

'Betalen mensen niet? Dat is dan maar zo'

Voor het afrekenen vertrouwt Sander op 'de goedheid van de mens'. Er kan geen geld gejat worden, want mensen kunnen er alleen pinnen. Loopt er iemand gewoon de deur uit na het eten, dan is dat pech.

Foodsy opent 5 november als pop-up aan het Hugo de Grootplein in Amsterdam. Sander zoekt nog een permanente locatie.

RTL Z / Karin Husslage

Note. Fake news item. Retrieved from: http://www.rtlnieuws.nl/economie/home/onbemand-restaurant-foodsy-kook-je-zelf