Where did it come from?

The effect of social media on the perceived credibility of news information

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Abstract

As more (mis)information is shared and consumed via social media, the need for critical evaluation of news sources becomes increasingly apparent. It is generally accepted that traditional news media are a more credible source of news information than social media due to verification standards. However, this is not always corroborated in previous experiments measuring credibility. This article investigates the effect of social media on the perceived credibility of news information, and how it is affected by social media informational literacy. A vignette experiment enabled the measuring and comparison of the perceived credibility scores of news articles presented either from a newspaper or from social media. No significant differences or effects were found to showcase a difference in perceived credibility of the two sources.

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1. Introduction

The internet has enabled an expanding amount of information, as well as misinformation, to be produced and shared in unprecedented ways, and every year the number of social media users increases (Kemp, 2022). Recent surveys have found that many teens even use social media as their main source of news, preferring it over traditional news organisations (Common Sense Media, 2019; Ofcom, 2022). This is worrying because of the fast intentional and unintentional spread of misinformation – "incorrect or misleading information" (Merriam-Webster, n.d.) – via social media, which can be hard to differentiate from the truth (Ceylan et al., 2023). Vosoughi et al. (2018) even showed that falsehoods reach more people and diffuse faster than the truth. Consuming misinformation, and believing it to be true, can have dangerous consequences. For example, during the COVID-19 pandemic, misinformation seriously undermined individuals' responses, with disastrous effects on global health (Barua et al., 2020).

It is often assumed that people view social media as less credible of a source than traditional media, and people indicate so in surveys and research. For example, the young people surveyed for an Ofcom (2022) study reported to be more confident in the news they received from traditional news organizations than that which they got from social media. And Salaudeen and Onyechi (2020) show that students trust mainstream media more because these outlets have processes in place to verify the information they disseminate. This sort of source bias, a preference for mainstream news over social media as a credible source, is in line with the "trust gap" that Mont'Alverne et al. (2022) recently identified. Their research shows that generally, people in India, Brazil, the UK, and the US have more trust in information from the more general news media, like well-known newspapers, TV, and radio broadcasters, than from news found on digital platforms like social media, messaging apps, and search engines.

However, this gap is not explained by a general hesitancy to trust non-verified information, but by higher levels of distrust among people who do not use the digital platforms at all. And Salaudeen and Onyechi's (2020) participants admitted to still use social media more often than the credible mainstream media because of the online platforms' accessibility, affordability and ubiquity, and the timeliness and currency of the information shared there. Additionally, many studies have shown that when an individual's opinion aligns with the content of a text, they will be less critical of its credibility (e.g. Westerwick et al., 2015). For example, Kim (2015) showed that partisans who agreed with a controversial text did not think that it was less credible when it came from a citizen blog compared to when it came from a mainstream online source. The vulnerability of people's critical evaluation of their news sources is dangerous in the current digital age because of the prevalence of misinformation.

A factor that has been shown to influence the way that citizens perceive texts and sources are multiple sorts of abilities to process information, defined as different types of literacy. For example media literacy (Melki et al., 2021), news media literacy (Cook et al., 2017; Hameleers, 2020), and information literacy (Jones-Jang et al., 2021) are certain tool kits that enable citizens to better detect fake news and therefore arm themselves against the dangerous effects of misinformation. Tandoc et al. (2021) introduce social media literacy specifically, including a social media *informational* literacy. This dimension addresses the ability to verify information found on social media.

Because of the earlier mentioned prevalence of misinformation on digital platforms (Vosoughi et al., 2018), as well as people's inclination to believe what they agree with, regardless of source (Kim, 2015), it is relevant to test whether the self-reported difference in perceived credibility also exists when participants are not directly comparing the two source-types. Furthermore, this study will include social media informational literacy to see how self-reported informational social media skills affect individuals' rating of the different sources' credibility. Therefore, this article aims to answer the following research question:

> *What is the effect of social media on the perceived credibility of news information, and how is this affected by social media informational literacy?*

This article aims to answer the research question using four sub-questions. The theoretical framework will answer sub-questions one, *what is perceived credibility of news information?* And two, *what is social media informational literacy?* And the methods and results sections will explain the experiment to answer sub-questions three, *how does social media affect the perceived credibility of news information?* And four, *how does social media informational literacy influence the effect of social media on the perceived credibility of news information?* The research consists of a vignette experiment that presents each respondent with one of two news articles, either presented as if it were from a newspaper or as if it were from social media, to then rate the article's credibility. This enables the comparison of the two sources' perceived credibility overall, as well as within the two different text groups.

The experimental design contributes to the existing literature by directly comparing the actual perceived credibility of the two sources specifically regarding news information. This gives the study a high validity and precision. Analysing how respondents rated the four different vignette's credibility gives concrete insight into the perceived credibility of news information presented via social media compared to via traditional news media in the form of

a newspaper. The analysis will show if the reported "trust gap" also exists when individuals are not asked to rank different types of sources' credibility, but only to assess the credibility of one text from a single source. Additionally, neither of the articles contain controversial topics, nor are citizens expected to know much about the content beforehand. Therefore, partisanship and other additional factors play as little of a role in this study as possible, as they have been researched much before (e.g. Kim, 2015; Karlsen & Aalberg, 2021).

Finally, this study also contributes to the field of public administration by bringing insight into citizens' trust in news information, specifically from social media. The matter in which the traditional media's perceived credibility varies from social media news' is extremely relevant, since the quality of information that citizens consume is vital to a democratic society (Strömbäck et al., 2020). Citizens need to receive reliable information, in order to make informed decisions regarding governance and leadership. If citizens do not perceive a difference in credibility between the often unverified news from social media and the generally verified news from traditional media, it has wide-ranging implications for the Dutch democracy.

This article will include a theoretical framework (chapter two) to outline the theoretical basis of the research, followed by a methods section (chapter three) to describe how the research was conducted. The results will be presented in chapter four, and in chapter five the conclusions are discussed.

2. Theoretical framework

This chapter aims to answer the first and second sub-questions by explaining the relevant concepts. It will also outline the theoretical background for this study, based on which the expected effects are formulated. Finally, these hypotheses are visualized in a conceptual model.

2.1 Defining perceived credibility and social media informational literacy

To answer the first sub-question, *what is perceived credibility of news information?* One can turn to Tseng and Fogg (1999, p. 39) who state that "credibility can be defined as believability". The concept is a perceived quality and highly subjective, and therefore this article refers to it as *perceived credibility*. On top of its essence of believability, the concept has been attributed many different dimensions (Diel & Roberts, 2021). Notably, in regards to the more specific credibility of news messages, concepts like accuracy, fairness, bias, trustworthiness, depth, and attractiveness of the medium have been included to describe and assess how credible citizens find certain information (Metzger et al., 2016; Meyer, 1988). This news credibility is broadly recognized to be dependent on messenger, message and receiver attributes, where the messenger and message are tightly linked (Diel & Roberts, 2021; Newhagen & Nass, 1989). This is traditionally also where the main responsibility for assessing the legitimacy of news lies. However, Kovach and Rosenstiel (2011) argue that the shift to the internet has taken a large part of this responsibility away from journalists and placed it on readers. This underlines the importance of news consumers' own skill in assessing the trustworthiness of information.

To answer the second sub-question, *what is social media informational literacy?* One first needs to tackle social media literacy overall. Tandoc et al. (2021) define this as "the types of literacy practices that social media users need to navigate social media effectively and responsibly." (p. 2486). And they subsequently identify four areas of literacy practices: "technical competency, social literacy, privacy protection, and informational awareness." (p. 2491) The fourth is most relevant and highlights the ability to distinguish between truthful and false information on social media. It is a self-reported scale to assess verification skills, fake news awareness, and the ability to find information on social media.

2.2 The relationship between social media and the perceived credibility of news information

As mentioned in the introduction, a trust gap is perceived between digital platforms and more mainstream (i.e. newspapers, television and radio) news (Mont'Alverne et al., 2022).

Observations like this one have turned into an assumption that citizens regard the traditional media with higher levels of trust than digital media. And when asked to rank the two types of sources, people find traditional news media to be more reliable (Salaudeen & Onyechi, 2020). However, the same Mont'Alverne et al. (2022) study shows that the trust gap can largely be explained by higher levels of distrust among people who do not use the digital platforms themselves. And Salaudeen and Onyechi (2020) also show that regardless of its lower credibility, digital media is still used far more frequently. These findings suggest that those who use social media as a news source themselves, might not be so sceptical of its content after all.

Simultaneously, multiple studies have found that when citizens encounter news that has been shared by a friend or family member on social media, their trust in its content is higher (Turcotte, 2015), regardless of the credibility of the source (Sterret et al. 2015). Similarly, continuous research shows that people's own opinion heavily influences their perception of news' credibility (Kim, 2015; Westerwick et al., 2015). Especially this last point is relevant. Kim's (2015) experiment shows that in rating a text with obvious valence on its bias and credibility, only the agreement levels between partisan opinion and content valence influenced participants' perceptions of its bias, the content and the author. Whether the source was a mainstream online source or a citizen blog did not matter. Partisans who agreed with the text's content assessed it as much less biased and more credible than those who did not agree. Additionally, those who agreed with the text did not rate the text as more credible when it was perceived via a mainstream online source compared to perception via a citizen-blog. Only those whose opinions did not align with the text's content valued the mainstream source as more credible than the blog. This highlights the dangers of a confirmation bias: if one agrees with a text's content, one is less likely to be critical of its source.

Similarly, the concept of motivated reasoning describes the effect that individuals will make an effort to process information shared by someone they agree with (e.g. a politician), in order to interpret it as correct (Petersen et al., 2013). Again, this phenomenon shows how unreliable the criticism on information's perceived credibility can be based on who shares it. Related is the notion that it is important to take into account that for those who do not trust traditional media, non-mainstream sources like social media, blogs, and digital-born providers are far more attractive options for information-gathering (Fletcher & Park, 2017). In other words, the assumption that citizens are more sceptical of information perceived through social media compared to more traditional news sources is not as obvious as one might think.

However, previous research has also shown that, in general, people do hold traditional news media in higher regard than news consumed via social media (Tandoc, 2019; Karlsen &

Aalberg, 2021). Aside from studies like Salaudeen and Onyechi's (2020) mixed methods study in which individuals concretely describe higher trust in mainstream media because of its verification standards, some experiments have also shown higher trust in news organizations than social media friends. For example, in Tandoc's (2019) experiment, even though participants rated their Facebook friends as more credible and similar to them than a news organization, news articles shared by a news organization were rated as more credible than news articles shared by a Facebook friend. Additionally, Karlsen and Aalberg (2021) show that when a news story is shared on Facebook, its perceived credibility diminishes, especially when the intermediary sender is a politician. This aligns with Besalú and Pont-Sorribes' (2021) survey experiment which shows that the same news item presented in a traditional media format was assigned more credibility, and was more likely to be shared, than news presented in a social media format. Based on these findings, and the fact that no additional factors like partisanship or high-valence content play a role in the experiment of this research, it can be expected that the same news article presented as if it was from a newspaper will be rewarded higher credibility scores than that which is presented as if it were a social media post. From this follows the first hypothesis:

H1: *Citizens find news information to be less credible if it is provided via social media than if it is provided via mainstream media.*

This relationship is further investigated by including the possible moderation of social media informational literacy.

2.3 The effect of social media informational literacy on the effect of social media news on the perceived credibility of news information

As mentioned before, studies have shown that certain abilities or attributes improve individuals' ability to critically reflect on information presented to them. For example, Westerwick et al. (2015) showed the effect of individuals' need for cognitive reflection (CR) - whether they are *able* to reflect on their intuitive reaction- on their confirmation bias (measured in their selection of and time spent with messages that challenge their pre-existing views). Low-CR individuals demonstrated a significant bias toward attitude-consistent content. This shows the need for certain skills in order to assess news items' credibility correctly. Hameleers (2020) shows that news media literacy interventions can be effective in lowering the perceived

accuracy of misinformation. The interventions enhance individuals' critical media skills beforehand by informing and warning citizens about misleading information and teaching them how to detect it. This finding is corroborated by Cook et al. (2017) that show that media literacy training can help in fighting the spread of misinformation. Contradicting these findings, Jones-Jang et al.'s (2021) experiment found that no (self-reported) literacies aside from information literacy (which was assessed in a test-format, not self-report) had an effect on helping the identification of fake news. However, one should note that the information literacy is really only applicable for individuals who have an academic background. Additionally, their findings are contradicted by Wei et al. (2023, p. 8) who found that Tandoc's social media literacy skills "significantly moderate the relationship between information sharing, status-seeking, the news finds me perception, trust in social media and fake news sharing in such a way that the effects/relationships are stronger among those with low social media literacy skills." This suggests that people with higher social media informational skills will be more critical of news published on social media compared to news published in mainstream media like newspapers. From this follows the second hypothesis:

H2: *Citizens with higher levels of social media informational skills will find news information presented to them via social media to be less credible than citizens with lower levels of social media informational skills.*

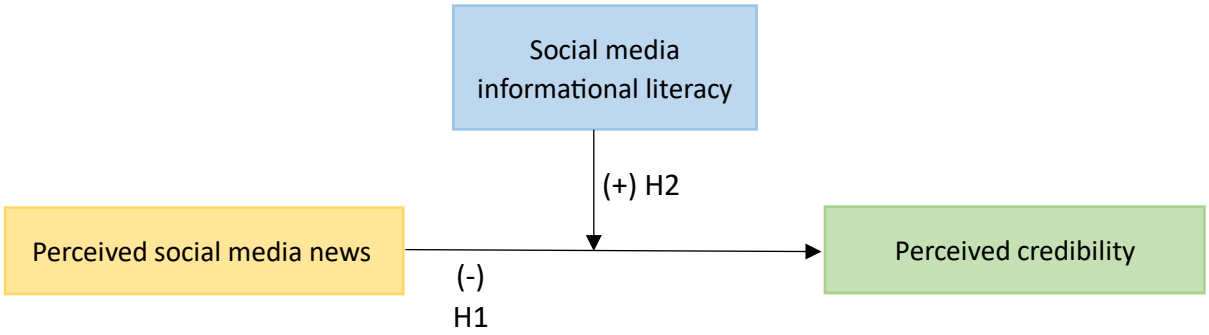
The hypotheses are visually presented in the conceptual model.

2.4 Conceptual model

The conceptual model visualizes the hypotheses. Perceiving news via social media is expected to result in lower levels of credibility attributed to the given news information compared to the same news being perceived through mainstream media. This effect is expected to be strengthened by an individual's social media informational literacy. Meaning that if an individual reports high levels of social media informational literacy, they will be more critical of the news information provided via social media.

Figure 1

Conceptual Model



3. Methods

This section outlines the research methodology to answer sub-questions three and four regarding the effect of social media on the perceived credibility of news information and regarding the influence of social media informational literacy on this effect. It will describe the research strategy, method, operationalization and validity and reliability of the experiment.

3.1 Research strategy

This study aims to answer the research question by conducting a quantitative vignette experiment embedded in a survey. The experiment consists of a total of four vignettes in a 2 x 2, between-subjects factorial design presenting participants with one of two news articles, presented as if the text was "from a newspaper" or "from social media". They then rate multiple statements to measure how credible they find the text. This strategy allows for the comparison of the two source groups' (newspaper vs social media) perceived credibility scores to see if there is any actual difference in citizens' trust of the two sources. Within one text group (i.e. two vignette groups that were presented the same text with different sources) the only thing that could result in a different credibility score is the associated source. This manipulation improves the validity of the research because the experiment does not rely on what source respondents *think* they find more credible while answering abstract questions (Dülmer, 2016). Instead, it more concretely measures the perceived credibility of both, simulating judgement in real life and increasing this study's validity and reliability.

The vignette groups' credibility scores are analysed separately as well as with both texts combined. The use of two different texts increases the reliability of the research. Instead of drawing conclusions from an isolated text, it enables the comparison of effects on two different texts. Whether the two texts' perceived credibility scores are affected similarly by the change in source is important in concluding whether social media actually effects the perceived credibility of news information or not and therefore contributes to the reliability of the experiment. Furthermore, the randomization in dividing the test population over the different vignettes ensures comparable respondent groups, and contributes to the experiment's external validity (Steiner et al., 2017). Randomization should eliminate the influence of other individual variables like gender, age, educational level, and the respondents' opinion on the subject, because they should be comparably distributed over each vignette group.

After rating one of the four vignettes, all respondents are asked to assess their own social media informational literacy skills by rating another set of statements. This data enables

the analysis of the possible interaction effect of social media informational literacy on the effect of social media on perceived credibility. The scale was constructed specifically to assess individuals' skills in verifying information from social media and is therefore appropriate for this study. The validated scale should ensure validity, but one should keep in mind that a self-report method of skills is not as valid as an actual test (Jones-Jang et al., 2021). Lastly, citizens are asked to enter basic demographic information to enable balance testing between the four vignette groups.

3.2 Research method

After reading the survey's introduction and giving informed consent, respondents are presented with one of the four vignettes. For each vignette, one of two different texts is presented either as "from a newspaper" or as "from social media" (see Appendix 1). The texts are short news articles adapted from the Dutch newspaper NRC. Both describe recent and peculiar scientific findings including descriptions of the research methods but without any explicit referencing (see Appendix 1). The first article describes the finding that people who eat according to a Mediterranean diet are less likely to suffer from Alzheimer's disease (Korteweg, 2023). The second centres around research which shows that orca mothers who have a son are much less likely to have further reproductive success than orca mothers who have a daughter (Venhuizen, 2023). Respondents are asked to read the text and then rate its credibility according to several statements.

To measure the vignettes' perceived credibility, items from Meyer's (1988) credibility index, as well as an extra item adapted from Kim (2015), are used. The scale consists of a total of five items regarding the article's trustworthiness, accuracy, depth, bias, and the reader's willingness to share it. All items are assessed on a 7-point Likert scale. Subsequently, the respondents will assess their social media informational literacy using Tandoc et al.'s (2021) five-item scale, also on a 7-point Likert scale. Finally, respondents are asked to enter their age, educational level, and gender to check if the test population is evenly distributed over the four vignette groups.

The sample is a convenience and snowball sample, gathered by distributing the survey in person as well as via social media, QR codes in gyms, and asking respondents to further share the survey with friends and family. The researcher aimed to reach a population as varied and representative of the Dutch population as possible by distributing the survey in a multitude of environments and attempting to gather as many respondents as possible.

For the data analysis, to answer sub-question three, regarding *the effect of social media on the perceived credibility of news information*, t-tests are conducted to measure the differences in perceived credibility between the source groups; both texts combined as well as within the two text-groups. Additionally, an analysis of variance (ANOVA) can show if there is any difference between the four vignette groups overall. Then, to answer sub-question four, regarding *the influence of social media informational literacy on the effect of social media on the perceived credibility of news information,* a regression analysis is performed to analyse the effects of social media as a source, social media informational skills, and the interaction of social media as a source multiplied with social media informational skills on the perceived credibility of the sources. Again, first with both texts combined and then separately. Finally, to check if the source groups are comparable, multiple balance tests will be conducted. First, a t-test for age, and then chi-square tests for gender and educational level. These tests ensure if the randomization of the population over the vignettes was effective so any measured effects are truly due to the experiment's manipulation. This strengthens the experiment's reliability.

3.3 Operationalization

The independent variable is determined by whether a respondent gets presented their news article as if it came from a newspaper or as if it came from social media. The newspaper group can be seen as the control group, whereas the social media group is the treatment group.

The dependent variable, perceived credibility, is assessed with a five-item scale. This scale consists of four items adapted from Meyer's Credibility Index (1988), and an additional item adapted from Kim (2015). The scale is rated on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). As shown in the operationalization table, the items record the text's credibility by asking whether the news article 1) is trustworthy, 2) is accurate, 3) tells the whole story, 4) is biased (reverse coded), and 5) worthy of sharing. The Dutch formulation for the items in the survey can be found in Appendix 1.

The possible moderator, social media informational literacy, is also tested on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). All five items are adapted from the informational section of Tandoc et al.'s (2021) social media literacy scale. The items ask respondents to rate their own ability to find, as well as evaluate and verify, information they encounter on social media. See table 1 for all five complete items in English and Appendix 1 for the Dutch items in the distributed survey.

Table 1

Operationalization Table

Definition	Dimension	Indicators
Perceived credibility = The perceived trustworthiness and reliability of the news information.	Source	The source is trustworthy
		The source is accurate
		The source tells the whole story
		The source is biased
		I would recommend this source to others
Social media literacy = The respondent's self-reported ability to assess and verify information found on social media.	Informational	Not everything I read on social media is correct
		I know how to search for information on social media
		I know how to verify whether what is shared on social media is correct
		I know how to use different sources of information to verify information I see on social media
		I can tell whether information on social media is true or false

3.4 Validity and reliability

The internal validity of vignette studies is generally high because one measures the exact effect the vignette has on the respondents' reaction and the only difference between vignettes must be due to the manipulation (Steiner et al., 2017). In this case, a difference in perceived

credibility scores of one text can only be attributed to the differing sources of the presented news information. Furthermore, the use of two different texts improves the experiment's reliability and generalizability. If an effect is found within two different texts, the finding is much more likely to be representative of a general effect. Similarly, if an effect is only found in one text and not the other, no general conclusions will be drawn, where it would have been drawn if there had been no reference experiment.

On the other side, the strong internal validity is offset by a reduced external validity (Steiner et al., 2016). Because of the use of specific vignettes, any measured effect is really only applicable to these two news articles. However, the use of two articles instead of one does improve the reliability and generalizability of the study. If an effect is found within two different texts, the finding is much more likely to be representative of a general effect. Similarly, if an effect is only found in one text and not the other, no general conclusions will be drawn, where they would have been drawn if there had been no reference experiment. So, regardless of its shortcomings, the findings will contribute to existing research by confirming or contradicting running theories by the increased construct validity of contextualized vignettes (Steiner et al., 2016).

Additionally, no specific source was given to respondents other than "newspaper" or "social media" these are broad and fairly vague concepts that respondents might interpret differently. This also negatively impacts validity. If a more concrete source might have been given (e.g. "NRC newspaper", or "an Instagram account") the effects might have been stronger and the experiment more valid, but it would have reduced reliability and especially generalizability greatly as it reduces the research to very specific sources that some respondents might not be familiar with or respond very differently to depending on what newspaper or social media channel they prefer. A much larger scope would be needed for such specificity to be beneficial.

According to Steiner et al. (2016), the reliability of a vignette study is defined by "reliable vignette measurements, a balanced and blocked experimental design, and a stratified respondent sample of sufficient size" (p. 54). This study utilizes a validated scale to measure the vignette's effects to ensure reliable vignette measurement, and powerful hypothesis testing. The sample was as varied as possible, but is limited in its generalizability because of the small scope of the research. However, the clear research design ensures for easy reproduction of the study to further confirm or refute the expected findings.

4. Results

This chapter will describe the test population, report on the needed information for the analyses regarding scale quality and assumptions, and test the hypotheses try to answer sub-questions three and four.

4.1 Descriptive results

164 Dutch students completed the survey. Their recorded ages ranged from 18 to 81, with six respondents preferring not to specify their age. It should be noted that because of the convenience sample, there is an overrepresentation of respondents in their early twenties, as well as late-fifties/early sixties. However, the gender distribution was fairly equal, with 45% of the sample being male, 50% female, and 2.4% identifying as non-binary, as well as 2.4% preferring not to say. Finally, 35% of respondents have obtained a university master's degree, 36% a higher bachelor's degree, 27% a high school degree, and 2% finished their primary school education. This is not exactly representative of the Dutch population because there is an overrepresentation of higher educated respondents and an underrepresentation of those with only a high school or primary school degree (Maslowski, 2020).

4.2 Quality checks

To estimate the perceived credibility, five items were used to assess the texts' (1) trustworthiness, (2) accuracy, (3) bias, (4) depth, and (5) whether respondents would recommend the text to others. This validated scale rendered an acceptable Cronbach's alpha (5 items, $\alpha = .763$) for the sample and can therefore be found to be reliable.

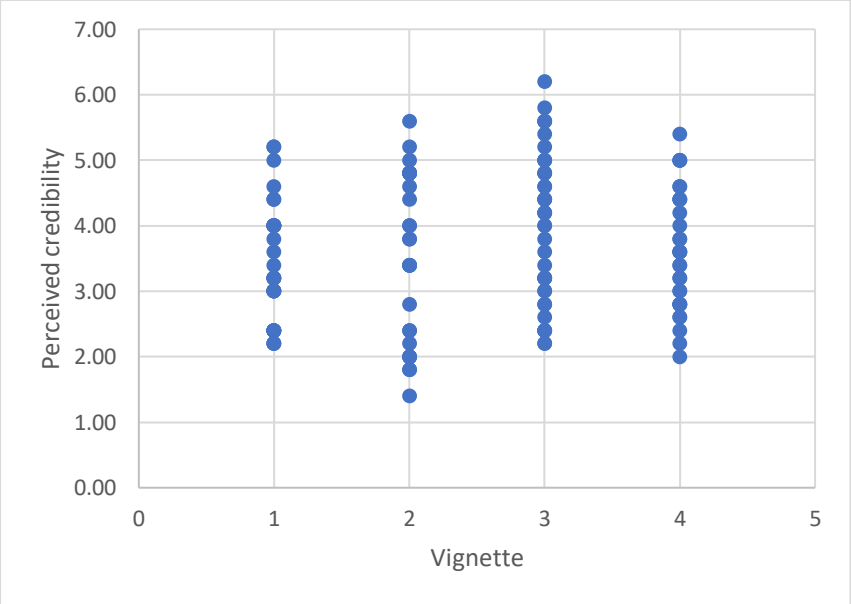
Additionally, to assess the respondents' informational social media skills, the recently developed informational section of the social media literacy skills validated scale by Tandoc et al. (2021) was used. This scale's Cronbach's alpha was also acceptable for the sample (5 items, $\alpha = .724$) and therefore found to be reliable.

4.3 Assumptions checks

To check if a t-test can be conducted, the data need to meet the necessary statistical assumptions. (1) The dependent variable (credibility) is measured on a continuous scale, namely on ratio level. (2) The independent variable consists of two categorical, independent groups, namely those that were presented the news information as if it came from a newspaper, and those that were presented it as if it came from a social media account.

Figure 2

Scatterplot of the Perceived Credibility Scores Per Vignette

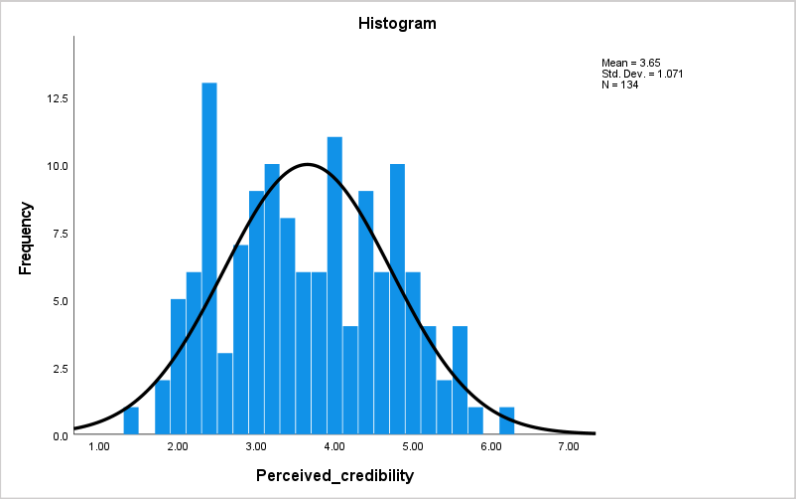


Note. The vignette numbers correspond to the following vignettes. 1: Orca mom article, presented as if it came from a newspaper. 2: Orca mom article, presented as if it came from social media. 3: Mediterranean diet article, presented as if it came from a newspaper. 4: Mediterranean diet article, presented as if it came from social media.

(3) There is independence of observations because of the randomization. Each respondent was only presented one vignette. (4) Three significant outliers were removed from the sample because they deviated from their vignette's credibility scores too much. See the scatterplot in figure 2 for the final distribution. (5) A histogram (figure 3) shows that the credibility scores are approximately normally distributed. (6) The homogeneity of variances between the social media and newspaper vignette groups is comparable according to a Levene's test ($F(1,132) = .009$, $p = .923$). An alpha value of $\alpha < .05$ will be maintained throughout all analyses determining significance. Since the p value of the Levene's test is greater than .05, the homogeneity assumption of variance is met. Since all of the assumptions are met, a t-test can be conducted without any additional considerations.

Figure 3

Histogram of the Perceived Credibility Scores



However, because the analysis consists of the comparison of two groups (newspaper article and social media post), the test populations should be similar, so any differences in perceived credibility are in fact due to the manipulation. To ensure this, the demographics of both groups were compared in multiple balance tests. An independent samples t-test showed that there were no significant differences in age between those who read a newspaper article (M = 43.35, SD =18.704) and those who read a social media news article (M = 40.48, SD = 18.759) ($t(156) = .961$, $p = .338$). Similarly, a chi-square test showed no significant differences in the distribution of men and women ($X^2(1, N = 156) = 0.958$, $p = .328$), and another chi-square test showed no significant differences in educational level between the two groups ($X^2(3, N = 164) = 0.442$, $p = .931$). These tests show that the two groups that will be compared, those who were presented news as if it were from social media and those who were presented news as if it came from a newspaper article, are comparable, at least in terms of age, gender, and educational level. Therefore, differences in perceived credibility are more likely to be due to the manipulation (difference in source) than other variables.

4.4 Hypothesis testing

To test H1, *citizens find news information to be less credible if it is provided via social media than if it is provided via mainstream media*, an independent samples t-test was conducted. The credibility score of the social media group (M = 3.581, SD = 1.086) was slightly lower than

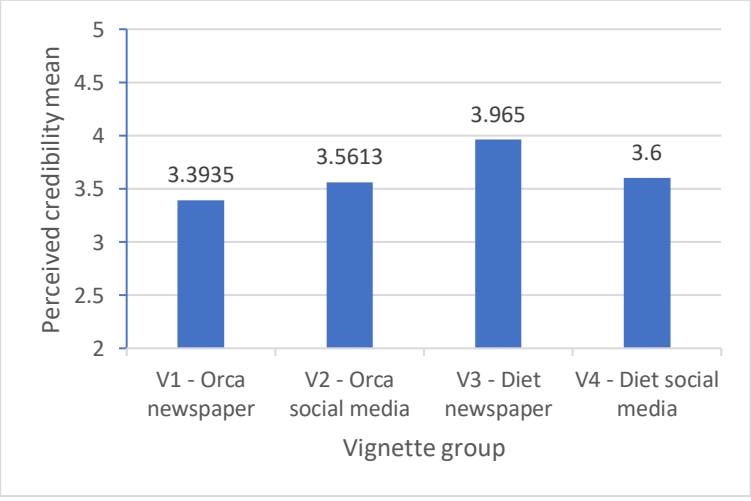
that of the newspaper group (M = 3.716, SD = 1.061), which is in line with the hypothesis. However, the difference was non-significant, $t(136) = 0.724$, $p = .470$), and a power analysis showed that the value was only power = .111 at the $\alpha < .05$ level. This shows that with the current sample, the likelihood of detecting an effect, if there is one to be found, is very low. Additionally, one should keep in mind that this test combines the perceived credibility scores of two different texts, which differ in overall perceived credibility (see figure 4).

Therefore, an analysis of variance (ANOVA) was conducted as a robustness check for differing perceived credibility scores between all four vignette groups (the orca mom (1) newspaper, and (2) social media groups, as well as the Mediterranean diet (3) newspaper and (4) social media groups). The ANOVA confirmed that there were no significant differences between the four vignette groups' credibility scores, $F(3, 130) = 1.876$, $p = .137$. However, the test does indicate some differences and with its power = .469 does invite further investigation.

Another independent samples t-test, performed only on the group that read a text on Mediterranean diet and Alzheimer's disease, showed that the newspaper group (M = 3.965, SD = 1.144) perceived the text as more credible than the social media group (M = 3.600, SD = 0.903). However this finding is also not significant, $t(70) = 1.474$, $p = .145$. A power analysis showed that for a significant effect at the $\alpha < .05$ level and a power of .8, two vignette groups of 127 respondents per source would have been needed. Now, the value is power = .320 and there is no significant effect to confirm that social media might have a negative effect on the perceived credibility of this text.

Figure 4

The Mean Perceived Credibility Scores of Each Vignette



Within the group that read the text on orca mothers, an opposite effect of the hypothesis was suggested. There, the newspaper group (M = 3.394, SD = 0.859) even reported *lower* credibility scores than the social media group (M = 3.561, SD = 1.262), but this difference is small and far from statistically significant: $t(52.870) = -0.612$, $p = .543$. Another power analysis showed that current power was only .092. The analysis is therefore enormously underpowered. For a proper value of power = .8, 651 respondents would have been needed in both source groups in order to get a significant outcome at the $\alpha < .05$ level. So even though this text-group's mean difference in perceived credibility scores between the social media and newspaper groups is opposite to the hypothesis, it should be noted that it is not significant and far from powerful.

To test H2, *citizens with higher levels of social media informational skills will find news information presented to them via social media to be less credible than citizens with lower levels of social media informational skills*, first the correlation between respondents' social media informational skills and their perceived credibility scores were tested. Because of the different texts with differing average credibility, the variables did not correlate significantly and the coefficient indicated an extremely weak negative association when both text groups were included in the same analysis ($r(132) = -.063$, $p = .470$). Then, to test the interaction effect of social media skills on the relationship between what source was presented and its perceived credibility, a regression analysis was performed (see table 2). The interaction variable has a *positive*, but not-significant, effect on the perceived credibility when the source was social media, weakening the negative effect of social media as a source itself on the perceived credibility. This means that people with higher levels of social media informational literacy, who were presented a news article from social media found the text to be *more credible* than those with lower levels of social media informational literacy. This directly contradicts the second hypothesis, however it should be mentioned again that the finding is not-significant. To further understand how social media informational literacy affected the perceived credibility of the different news articles and their sources, the same analysis was also done on the different text groups since there were significant differences in credibility score means.

When testing for a correlation between the social media skills and credibility in the Mediterranean diet group, only a very weak, non-significant negative correlation was found ($r(71) = -.080$, $p = .512$), suggesting that people with higher social media skills found the text to be slightly less credible. To see if the social media skills had an effect on the relationship between credibility and source, a regression analysis (see table 3) was conducted.

Table 2

Interaction Effect Analysis: All Four Vignettes Included

Effect	*SE*	β	95% CI		*p*
			LL	*UL*	
Intercept	0.692	3.934	2.565	5.304	.000
Social media source	1.006	-0.778	-3.637	0.347	.105
Informational skills	0.136	-0.049	-0.321	0.215	.696
Interaction social media source and informational skills	0.195	0.742	-0.90	0.683	.131

Table 3

Interaction Effect Analysis: Mediterranean Diet Vignettes Only

Effect	*SE*	β	95% CI		*p*
			LL	*UL*	
Intercept	0.892	5.142	3.360	6.924	.000
Social media source	1.416	-1.085	-5.083	0.576	.117
Informational skills	0.175	-0.219	-0.219	0.106	.168
Interaction social media source and informational skills	0.274	0.926	-0.183	0.912	.189

The regression analysis shows another positive interaction effect, where people with higher levels of social media skills who were presented a social media article found the text to be more credible than those with lower levels of social media skills, also contradicting the hypothesis. However, this again was a non-significant finding.

Within the orca mom group, a weak but significant positive correlation was found between social media informational literacy and perceived credibility ($r(63) = .276$, $p = .036$). This means that on average, higher values of self-reported ability to verify information found on social media corresponded with higher values of perceived credibility, regardless of the presented source of the article. To investigate the interaction effect of social media informational literacy skills on the effect of social media on the perceived credibility of the orca-mom text, a last regression analysis was performed (table 4). Again, the analysis shows the same positive interaction effect. Where people with higher levels of social media informational literacy actually rated the articles presented with social media as their source as more credible than people with lower levels of social media informational skills. However, this finding is also not statistically significant.

Table 4

Interaction Effect Analysis: Orca Mom Vignettes Only

Effect	*SE*	β	95% CI		*p*
			LL	*UL*	
Intercept	1.045	2.321	0.225	4.416	.031
Social media source	1.413	-0.212	-3.283	2.85	.752
Informational skills	0.204	-0.195	-0.207	0.612	.326
Interaction social media source and informational skills	0.274	0.326	.-0.419	0.680	.636

5. Conclusion and discussion

This chapter aims to answer the research question *what is the effect of social media on the perceived credibility of news information, and how is this affected by social media informational literacy?* It will also further explain the relevance of the study, and provide recommendations for follow-up research and policy proposals.

This research set out to investigate the effect of social media on the perceived credibility of news information through a vignette study that showed one of two news articles to participants, presented as if they were either from social media or a newspaper. No statistically significant results were found to support the first hypothesis that social media reduces perceived credibility of news information. The data analysis showed no significant mean differences between the two source-groups combined because of varying levels of the texts' overall credibility. The text regarding Mediterranean and Alzheimer's disease was perceived as considerably more credible than the text regarding orca mothers' reproductive success.

Even when the two sources' perceived credibility were compared within each text group, no statistically significant effects were found to support the first hypothesis. However, the analyses did render a peculiar result. Namely, an opposite effect was found between the two text groups. In line with the first hypothesis, the text on the effects of a Mediterranean diet was found to be more credible by those who were presented it as a newspaper article, than those who were presented it as a social media post. This is in line with earlier experiments where participants found mainstream news sources to be more credible than online platforms and social media (Tandoc, 2019; Karlsen & Aalberg, 2021; Besalú & Pont-Sorribes, 2021). However, one should keep in mind that this finding is non-significant. Regardless, its power value was much higher than that of the orca group, which showed an opposite effect.

Namely, the vignette groups who were presented the article on orca moms showed an opposite effect to the hypothesized relationship. One should keep in mind that the t-test was not significant, the mean difference small, and the power of the analysis low, but the mean credibility score of the social media vignette was higher than that of the newspaper vignette. This is peculiar because even with a smaller test population, one expects to see a higher credibility attributed to mainstream media than to social media as a source of news information. The only explanation that comes to mind is that individuals turn to social media for more peculiar news (Salaudeen & Onyechi, 2020). It is more entertaining and niche than the mainstream news which only reports on information when it is "newsworthy" (Pang et al., 2014). Therefore, respondents might have found the finding that orca mothers' reproductive success significantly reduces when they have a son, but not when they have a daughter so

strange that the information is likely to be shared on social media, but not expected for traditional media to cover it.

Interestingly, the orca mom article group showed a significant correlation between social media skills and perceived credibility scores. This means that those who reported higher skills in verifying information on social media, also found the text to be more credible, regardless of source. This finding directly contradicts with Wei et al. (2023), who reported that low social media literacy skills strengthened the relationship between, among other things, trust in social media and fake news sharing. This would suggest that people with higher scores of social media informational literacy might be more sceptical of a text, either from a newspaper or social media account, with no explicit references or proof; only "recent research shows" was an indicator of trustworthiness in the text. Yet across both the newspaper and social media orca vignettes, people with high self-reported social media skills also perceived the text as more credible. This could support the notion that those who perceive more information via social media, and are thus more likely to report higher levels of social media skills, also find a more peculiar, niche news item to be credible, whereas people who rarely consume social media news have a different idea of what news looks like and therefore find the whole orca article to be not credible. Regardless, no conclusions can be drawn based on the data at hand because the analyses rendered no statistically significant findings.

This study also tried to investigate whether social media informational literacy affects social media's effect on perceived credibility, by conducting multiple regression analyses. No statistically significant results were found to support the second hypothesis that people with higher levels of social media informational literacy will perceive news presented via social media as less credible than people with lower levels of these verification skills. Even though no results were significant, they did inspire further examination. All three regression analyses (performed on the entire population with both texts combined, as well as on the two separate text groups) namely showed that individuals who reported higher levels of social media informational skills, found the news information from social media to be *more* credible. Each interaction effect was positive, meaning that it heightened the credibility score. This contradicts with the second hypothesis. Higher levels of social media informational skills did not further lower the perceived credibility of news information presented via social media, but *heightened* it. Regardless of the lack of significance due to the small test population divided over four vignettes, the finding is interesting to compare with existing literature. It contradicts with research that shows that types of literacy improve individuals' assessment of how credible a

source is, most notably Wei et al. (2023). The finding does however align with Jones-Jang et al. (2021) who argue that no self-report scale can accurately assess citizens' ability to identify fake, or in this case suspicious, news.

Notwithstanding how interesting the results of this experiment are to speculate about, none of the hypothesis-related findings were significant. Due to the already small test population, which was further divided over four vignette groups, this study is very limited in the power of its analyses. Furthermore, the sample is not perfectly representative of the Dutch society, especially because of the over-representation of people in their early twenties and late fifties/early sixties. A replication of the study at hand with a much larger and more varied test population could already give more insights into the relationships.

Additionally, it should be considered that a five-item scale cannot perfectly capture how credible an individual actually finds a text. A similar issue is especially prevalent in this study's operationalization of the moderator "social media informational literacy skills". A self-report scale usually has questionable validity (Jones-Jang et al., 2021), but using the Tandoc et al. (2021) scale completely excludes people who do not use social media, even if they might have good verification skills if they were.

Even though this research rendered no statistically significant results, its findings do add to the existing literature, and highlight a need for additional research, by suggesting that the trust gap might not be as strong and defined in reality and practice as is reported when one asks citizens which they find more reliable directly (e.g. Ofcom, 2022). Additionally, it exposes the need for further developing a scale to assess one's ability to verify information that does include social media use, yet does not exclude those who do not participate. The study is also societally relevant because it shows that citizens do not necessarily find the unverified source social media less credible. Therefore, it highlights the need for further improvement of the population's ability to verify their news sources.

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Appendix 1

Introduction

Q1 Welkom en bedankt dat u de tijd neemt om deze vragenlijst in te vullen.

Er volgt nu eerst een uitleg over deelname aan het onderzoek. Daarna start de enquête. Alles samen duurt het niet langer dan tien minuten.

Informed consent

Vignettes

Q4 Leuk dat je deelneemt aan het onderzoek! Je krijgt zo een bron te lezen die je met behulp van vijf stellingen beoordeelt. Daarna krijg je nog vijf stellingen over je sociale media vaardigheden. Als laatste wordt nog wat basisinformatie gevraagd.
Nogmaals bedankt en veel plezier!

Each respondent is presented one of the following four vignettes. The vignettes are divided equally over the test population.

Q5 Lees het volgende nieuwsbericht uit de krant: OF Q7 Lees het volgende nieuwsbericht van sociale media:

Uit recent onderzoek is gebleken dat als vrouwelijke orka's voor een volwassen zoon zorgen hun jaarlijkse voortplantingssucces ongeveer halveert – zelfs als hij al tegen de twintig jaar oud is. Bij moeders met volwassen dochters is zo'n duidelijke invloed niet te zien.

Het was al bekend dat orkamoeders een innige band hebben met hun kinderen en dat ze intensief hun ecologische expertise delen. Maar dat die uitgebreide zorg ten koste ging van de moeders zelf was onbekend. Tijdens het onderzoek werden veertig vrouwelijke orka's van 1982 tot 2021 bestudeerd en hun kans op voortplantingssucces geanalyseerd. Bij vrouwtjes die nog geen nageslacht hadden bleek die het grootst, bij moeders van volwassen dochters iets lager en bij moeders van volwassen zoons ongeveer twee keer zo laag.

De verschillen waren niet toe te schrijven aan intensievere moedermelk consumptie of aan de simpele aanwezigheid van mannetjesgroepsleden die meer energie kost. Dergelijke effecten waren namelijk niet te zien bij moeders die hun zoon verloren of bij vrouwtjes met niet-verwante mannetjes in hun groep. Men denkt dat het wél zo zou kunnen zijn doordat jongensmoeders minder eten binnenkrijgen omdat ze meer prooi delen met hun volgroeide zoons. Daarnaast bleek de moederzorg bij zoons ook voort te duren terwijl dochters minder werden gepamperd.

OF Q9 Lees het volgende nieuwsbericht uit de krant: OF Q11 Lees het volgende nieuwsbericht van sociale media:

Uit recent onderzoek is gebleken dat mensen die een mediterraan eetpatroon aanhouden in de loop van negen jaar tot 23 procent minder vaak dementie krijgen dan mensen die zich minder goed aan dat gezonde eetpatroon houden. Die risicovermindering was onafhankelijk van de erfelijke aanleg voor dementie en laat goed zien hoe belangrijk het eetpatroon is voor de gezondheid.

Dit mediterrane eetpatroon bevat veel groenten en fruit, volle granen en peulvruchten, voldoende olijfolie, vis en noten, en weinig rood vlees, zuivel en bewerkte etenswaren zoals snoep en bewerkte snacks. In het onderzoek viel wijnconsumptie ook onder het mediterrane dieet. Er zijn aanwijzingen dat dit eetpatroon de cognitieve achteruitgang remt, maar of het echt een rol speelt bij het afremmen van de ziekte dementie is nog niet duidelijk.

Onderzoekers gebruikten de gegevens van ruim 60.000 zestigplussers die uitgebreide vragenlijsten over hun etensgewoonten hebben ingevuld. Op basis van die vragenlijsten werd nagegaan of het eetpatroon van deelnemers overeenkwam met het mediterrane. Deelnemers werden in drie groepen verdeeld: met een lage, een middelhoge, of hoge score. Er kregen 882 deelnemers dementie. In de groep die zich het beste aan het mediterrane eetpatroon hield, was het risico op dementie 14 tot 23 procent lager dan in de groep die zich het minst eraan hield.

Uit de studie kan nog niet worden opgemaakt of een gezond eetpatroon het lagere risico op dementie veroorzaakt, maar de resultaten komen overeen met een andere recente studie.

Q6/Q8/Q10/Q12 Beoordeel het bovenstaande nieuwsbericht op de verschillende aspecten (helemaal mee oneens – helemaal mee eens)

- Het nieuwsbericht is betrouwbaar
- Het nieuwsbericht is nauwkeurig
- Het nieuwsbericht vertelt het hele verhaal
- Het nieuwsbericht is bevooroordeeld
- Ik zou dit nieuwsbericht aan anderen

Q13 Met de volgende stellingen schat je je eigen sociale media vaardigheden in. Ieder niveau van kennis is behulpzaam voor het onderzoek, dus wees zo eerlijk mogelijk. (helemaal mee oneens – helemaal mee eens)

- Alles dat ik lees op sociale media is correct
- Ik weet hoe ik informatie op kan zoeken via sociale
- Ik weet hoe ik kan verifiëren of dat wat op sociale media gedeeld wordt correct is
- Ik weet hoe ik verschillende informatiebronnen kan gebruiken om informatie van sociale media te verifiëren
- Ik kan zien of informatie op sociale media correct is of correct is of niet

Q14 Om een beeld te krijgen van welke populatie deelneemt aan het onderzoek vragen we nog om drie eigenschappen.

Q15 Wat is uw leeftijd? …

Q16 Wat is uw gender?

- Man
- Vrouw
- Niet-binair
- Ik zeg dat liever niet

Q17 Wat is uw hoogst afgeronde opleidingsniveau?

- Basisonderwijs
- Vmbo, mbo1, avo onderbouw
- Hbo, wo: bachelor
- Wo: master, doctor