

Taking corrective action when exposed to fake news: The role of fake news literacy

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ABSTRACT

Fake news poses a threat to democracy. The rise of social media and its lax content regulation have facilitated a dynamic environment where mis- and disinformation are spread. However, social media is also the place where false information may be corrected. Initial scholarly efforts begin to highlight what is needed for citizens to take corrective action when exposed to fake news on social media. This study is a further step in that direction by introducing the construct of 'fake news media literacy'. Relying on survey data from the U.S. ($N = 1338$), we show that news media literacy in terms of media locus of control and need for cognition might not be sufficient to take corrective action; individuals rather need to develop specific fake news literacy. Implications for media literacy initiatives are discussed.

Keywords: *fake news, disinformation, news media literacy, need for cognition, media locus of control.*



INTRODUCTION

Since the 2016 U.S. Presidential Election, ‘fake news’ has garnered unprecedented attention from journalists, academia, and the public (Egelhofer & Lecheler, 2019; Freelon & Wells, 2020; Tong et al., 2020). Although the effects of disinformation on democratic variables such as voting are still primarily unknown, there are concerns about the perceived influence of disinformation dissemination and exposure (Jang & Kim, 2018; Weeks & Gil de Zúñiga, 2019). While disinformation is not a new phenomenon (Boczkowski, 2016), the increasing growth of social media and its lack of regulation definitely help the spread of disinformation. However, it is also the place where fake news can be corrected (Bode & Vraga, 2018; Vraga et al., 2020).

Responding to the prevalence of disinformation, recent research has explored ways to debunk false information and discussed the problem with fact-checking, tagging and flagging fake news (Andersen & Søre, 2020; Hameleers & van Der Meer, 2020; Oeldorf-Hirsch et al., 2020). Unlike media censorship and gatekeeping which largely hinge on the operation of media practitioners, *corrective actions* are behaviors that media users can take as a reaction to the content they are exposed to, proactively voice their own views, and counterbalance the effects of fake news. Key questions are whether education and media literacy can be successful in preparing individuals to deal with fake news (Bulger & Davison, 2018; Mason et al., 2018). Jones-Jang et al. (2021) found that media literacy helped individuals to identify fake news only to a limited extent, and argue that “as fake news stories resemble the format of real news stories and are systematically produced and distributed, critical-thinking skills of media messages may not be enough to discern real from fake stories” (p. 382).

Following this argumentation, in this paper we distinguish between general media literacy and specific fake news literacy. We introduce the concept of fake news literacy which we define as the ability to discern fake news from real news. By using online survey data from the U.S. ($N = 1338$), we test a) direct relationships between two dimensions of general news media literacy (media locus of control and need for cognition; see Maksl et al., 2015) and fake news literacy, b) direct relationships between both forms of literacy and fake news corrective actions, and c) mediating mechanisms.

News Media Literacy

In the literature, a wide array of different conceptualizations of literacy can be found. The notion of literacy has been expanded “from a narrow definition identifying it with a set of psycholinguistic skills to a wider understanding of its semantic content linking it to the particular sociocultural contexts within which literacy is practiced” (Ranieri, 2019). News media literacy can be defined as the ability to “access, analyze, evaluate, and communicate a variety of media messages” (Ashley et al., 2010, p. 37). It is associated with individuals’ understanding of how the media industry works and the effects these messages might have on them (Ashley et al., 2010; Christ & Potter, 1998). Scholars have suggested that news media literacy mainly pertains to a news consumer’s skills in navigating sophisticated information such as identifying information sources, evaluating evidence, and identifying credibility of information (Fleming, 2014). Beyond individuals’ education and basic skillsets, another key assumption of news media literacy is individuals’ understanding of the media industries and media effects (Christ & Potter, 1998). Maksl et al. (2015) developed a model, in which three dimensions were found decisive in shaping an individual’s news media literacy, namely, media locus of control, need for cognition, and news media knowledge structure. The current study adopts the first two dimensions – media locus of control (MLOC) and need for cognition (NFC).

News Media Literacy (MLOC and NFC) and Fake News Media Literacy

The concept of fake news is not new and it is not the first time that disinformation is being disseminated (Boczkowski, 2016). However, the ease of use, free access, and lack of gatekeeping mechanisms of social media have enabled both the production and the dissemination of disinformation (e.g., Buchanan & Benson, 2019; Ross & Rivers, 2018). For instance, 8.7 million individuals were engaged on Facebook in fake news stories while 7.3 were engaged with the mainstream news during the election cycle (Kurtzeleben, 2018). Scholars developed an array of different definitions of fake news. Fake news may mostly emerge as a form of misinformation consisting of “posts based on fictitious accounts made to look like news reports” (Tandoc et al., 2018, p. 138). Others have defined fake news as articles that are “intentionally and verifiably false, and could mislead readers” (Allcott &

Gentzkow, 2017, p. 213). Scholars have indicated two factors that motivated the production of fake news (Allcott & Gentzkow, 2017; Tandoc et al., 2018). First, fake news often contains outrageous content, which can lead to more clicks, making it potentially profitable; second, particular opinion can be conveyed via fictional information to strengthen one particular ideology and attack or discredit others (Allcott & Gentzkow, 2017; Tandoc et al., 2018).

The use of the term fake news is discussed controversially. While some scholars argue that the term should be no longer used because the term seems too fuzzy and its use might legitimate anti-democratic propaganda (e.g., Habgood-Coote, 2018), others classify the term as helpful because it allows to draw attention to this phenomenon that should be continued to be discussed in scholarly work (Pepp et al., 2019). In line with Egelhofer and Lecheler (2019), we argue that abandoning the term from scholarly work might not solve the problem; rather the term should be used with caution and not be applied vaguely to all forms of falsehood in the news.

In the current study, we introduce the concept of fake news literacy. Building on prior research on made-up news (Pew Research Center, 2019) and news media literacy (Schmeichel et al., 2018), we define fake news literacy as individuals' ability to discern fake news from real news. One key question of interest is whether or not general news media literacy helps individuals to develop fake news literacy. News media literacy has been shown effective in shaping a series of psychological or behavioral variables, such as event knowledge (Vraga et al., 2015), political efficacy (Semetko & Valkenburg, 1998), and conspiracy theory endorsement (Craft et al., 2017). Moreover, studies have confirmed the positive association between news media literacy and current events knowledge (e.g., Ashley et al., 2017; Maksl et al., 2015). Moreover, news media literacy was also found to facilitate individuals' skeptical attitudes toward news content (e.g., Maksl et al., 2015; Vraga et al., 2015). Scholars have suggested that an important feature of news media literacy pertains to the ability of general inquiry and critical thinking; hence, highly media literate individuals usually are skeptical of the media content due to their familiarization with media practice routines, and better understanding of the news production and dissemination environment (Mihailidis, 2009; Vraga et al., 2015).

Although a wide variety of literature has investigated the effect of news media literacy on various psychological and behavioral variables, research on its

role in relation to disinformation is needed. Accordingly, this study aims to test the relationship between general news media literacy (media locus of control and need for cognition) and the specific form of fake news literacy. Media locus of control (MLOC) refers to people's self-perceived responsibility and ability to control the influence of the information they consume (Maksl et al., 2015; Wallston et al., 1978). MLOC initially stemmed from the overall internal locus of control variable, which is related to the belief that one's behavior of controlling reinforcement will lead to rewards (Chak & Leung, 2004). Those individuals who score high on MLOC, perceive themselves as able to control the effects of the information they consume (Maksl et al., 2015; Wallston et al., 1978). As a result, these individuals should also be more likely to detect information that is not accurate. Therefore, we formulate the following hypothesis: *H1a: Individuals with higher MLOC will show higher levels of fake news literacy.*

Need for cognition (NFC) is defined as an individual's enjoyment of rational thinking (Cacioppo & Petty, 1982), and is regarded as a predisposition of mindful processing. Scholars have suggested that NFC can explain intrinsic motivations for critical consumption of news (Vraga & Tully, 2019). NFC-driven individuals are more likely to process information through an "analytical approach that is active, conscious, effortful, logical, intentional, and therefore more comprehensive" (Austin et al., 2016, p. 601). Heijltjes et al. (2014) suggested that NFC-oriented individuals were more likely to analyze issues and information more critically. Moreover, Feist (2012) found that NFC had a positive association with people's interests in science, which they believed entailed a higher degree of critical thinking process. Nair and Ramnarayan (2000) also indicated that individuals with higher levels of NFC gathered more comprehensive information on problems at hand and thus were more deliberate and efficient in problem-solving and decision-making. We argue that NFC can play a significant role in facilitating fake news literacy. Scholars have already demonstrated that individuals who report higher levels of NFC usually process a larger variety of arguments and they are more likely to identify heuristic biases in the arguments after assessing the strengths and weaknesses of the information at stake, generating counterintuitive insights in their cognitive process (Austin et al., 2016).

Therefore, we propose: *H1b: Individuals with higher levels of NFC will show higher levels of fake news literacy.*

FAKE NEWS CORRECTIVE ACTION

Corrective actions are reactive actions taken by news consumers to correct or rectify the content they consumed and make an impact on others (Rojas, 2010). Algorithms may partially explain how people are exposed directly or incidentally to (fake) news (Scheffauer, 2021), but not everyone engages in corrective behaviors when being exposed to fake news. Similarly, some fake news correction can also happen via algorithms by identifying and correcting disinformation, as well as individual behaviors such as commenting on Facebook or other online discussion forums (Bode & Vraga, 2018; Rojas, 2010). Corrective behaviors are reactive and are “based on perceptions of media and media effects, and seek to influence the public sphere” (Rojas, 2010, p. 347). Bode and Vraga (2018) have suggested that both algorithmic correction and social corrections are effective in limiting misperceptions.

Fake News Literacy and Fake News Corrective Action

The link between media literacy and corrective action becomes obvious when looking at an early media literacy definition: Aufderheide (1993) defined media literacy as “the ability of a citizen to access, analyze, and produce information for specific outcomes” (p. 6). This definition includes not only citizens’ ability to processing information critically, but also to becoming active and creating information themselves. When adapting this early definition to the 21st century and specifically to the fake news phenomenon, fake news literate citizens should be able to take corrective action when encountering fake news by creating content themselves. Accordingly, the idea of media literacy as a central component of democratic citizenship (Burroughs et al., 2009; Hobbs, 1998), seems to be especially relevant when it comes to fake news.

Prior research indicates that news media literacy increases news skepticism (Vraga et al., 2015) and political knowledge (Ashley et al., 2017). News media literacy has also been found to negatively influence conspiracy theory endorsement (Craft et al., 2017). Conspiracy theory, particularly flourishing within the context of social media (Mari et al., 2021), is often initiated by an overestimation of the political actors’ abilities, hence, individuals endorsing conspiracy theory often lack deep knowledge of how media work (Ardèvol-Abreu et al., 2020; Craft et al., 2017). These

prior studies show that news media literacy could influence individuals’ ability to detect fake news since one of the first steps to detect disinformation is to be knowledgeable about current events. In the same way, those individuals who are fake news literate will be able to decipher disinformation from real news.

Furthermore, this empowering role of news media literacy also holds true in shaping individuals’ internal political efficacy (e.g., Ashley et al., 2017; Tully & Vraga, 2018). Defined as an individuals’ perception of their ability to make sense of or exert personal impact on the current political system (Semetko & Valkenburg, 1998), increased internal political efficacy has been found to be another outcome of news media literacy. Ashley et al. (2017) found that those who exhibited higher news media literacy scored higher on internal political efficacy as well. Moreover, combining an experiment and interviews, Tully and Vraga (2018) suggested that news media literacy served as a significant antecedent of internal political efficacy.

Both news media literacy and internal political efficacy share the same psychological prerequisite, such that individuals perceive themselves as critical information consumers and “effective participants in the democratic process” (Tully & Vraga, 2018, p. 770). Similarly, those who have the perception that they will be able to control disinformation will also score high on internal efficacy. Individuals who are fake news literate might perceive that it is their responsibility to minimize the impact of inaccurate information. We think this ‘empowering’ feeling would lead them to take action, in this case to correct disinformation.

Therefore, we propose: *H2: Individuals with higher fake news literacy levels will be more likely to take corrective action when encountering disinformation.*

News Media Literacy (MLOC and NFC) and Fake News Corrective Action

Besides the effect of specific fake news literacy on people’s willingness and ability to correct disinformation, we are also interested to see to what extent having general news media literacy helps engaging in fake news corrective actions. As discussed above, MLOC is the ability to control the influence of media (Maksl et al. 2015; Wallston et al., 1978). Those individuals who perceive themselves as able to control the effects of media might feel confident to correct disinformation. With the increasing spread of fake news especially during political campaigns, understanding the variables that may be able predict individuals’ fake news

correction behavior is important. However, since the relationship between MLOC and fake news correction behavior has not been studied before, we pose a research question: *RQ1a: What is the relationship between MLOC and fake news corrective actions?*

Similar to the relationship between MLOC and fake news corrective behavior we were interested in the relationship between NFC and fake news corrective action. Individuals who score high on NFC use an analytical approach to information processing (Austin et al., 2016). As already argued, these NFC-driven individuals might be more fake news literate as well. Individuals who are able to detect fake information and are able to differentiate disinformation from real news will probably have the potential to corrective action behavior. We can conclude from the extant literature (e.g., Heijltjes et al., 2014; Nair & Ramnarayan, 2000; Vraga & Tully, 2019) that NFC-driven individuals will have the ability to correct disinformation. Individuals who are deliberative about their information processing and are able to process a larger variety of arguments (Austin et al., 2016), might be able to take action against disinformation when they detect it. Although NFC has been studied in a variety of contexts, the connection between NFC and fake news corrective action is not clear.

We propose the following research question: *RQ1b: How is NFC related to fake news corrective actions?*

Fake News Literacy as mediator

As discussed before, news media literacy has been shown to have empowering effects. For instance, individuals who are more news media literate score higher on internal political efficacy (e.g., Ashley et al., 2017; Tully & Vraga, 2018), and higher political efficacy has been often associated with empowering outcomes such as political action (e.g., Jung et al., 2011). Indeed, digital media literacy activities have been found to promote online civic and political participation (Kahne et al., 2012). We expect a similar mechanism when it comes to fake news. More specifically, we expect people who show higher levels of media locus of control and need for cognition to be more likely to develop fake news literacy, which in turn should increase their likelihood to take corrective action when encountering disinformation. Thus, we propose the following final hypothesis (for an overview of all H and RQ, see Figure 1): *H3: The relationship between MLOC (H3a) and NFC (H3b) and fake news corrective action is mediated through fake news literacy.*

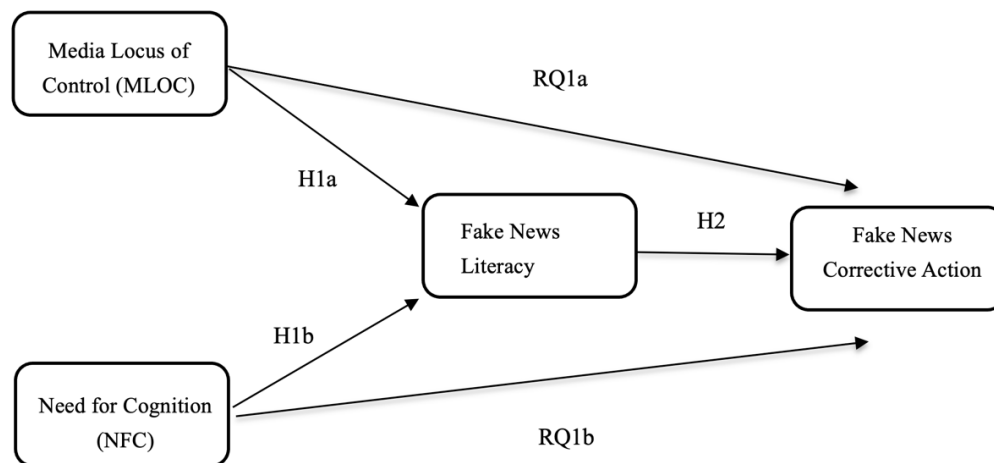


Figure 1. Model of News Media Literacy (Media Locus of Control and Need for Cognition) on Fake News Literacy, and Fake News Corrective Action

METHOD

Sample and data

This study uses survey data from the U.S. The online survey was performed by IPSOS, an international polling company charged with the curation and

provision of all study's subjects as contracted by the Media Innovation Lab (MiLab) at University of Vienna. Data were collected in June 2019, drawing from a stratification of 3,000 individuals in an opt-in panel of respondents to mimic the US census in key demographic variables (i.e., age, gender, income, and education). The final sample of the study yielded 1,338 individuals

which roughly accounted a 45.5% cooperation rate according to the American Association for Public Opinion Research survey calculation tool (AAPOR, 2018).

The composition of this study’s demographic characteristics resembles quite similarly the overall US census estimates. Also, as a mode of comparison, the demographic breakdown of the study fits very well with those obtained through random dial sampling techniques employed by Pew Research Center (Pew American Life Project, 2018; for a detailed overview of descriptive sample breakdown and a data distribution a full table is available at Gil de Zúñiga et al., 2021).

Measures

Table 1 shows descriptive statistics and reliability scores for key measures. For constructs that consist of three or more items, Cronbach’s alpha was calculated. For constructs that consist of only two items, Spearman-Brown Coefficient was calculated (Eisinga et al., 2013). Most of our variables met the common threshold of .70

(Streiner, 2003). Only two variables showed slightly lower coefficient – media locus of control (.61) and fake news corrective action (.65). Since prior research validated the construct media locus of control ($\alpha = .61$ Ku et al., 2019; $\alpha = .64$ McWorther, 2020, p. 150), we built on the same measurement instrument, reaching a very similar coefficient. For fake news corrective action, a coefficient close to .70 can be deemed acceptable, since it is a newly developed scale which is highly useful and can be further improved in future studies (Taber, 2018).

Fake News Literacy. Building on prior research on made-up news (Pew Research Center, 2019) and news media literacy (Schmeichel et al., 2018), we formulated the following three statements and asked respondents how much they agree or disagree (1 = strongly disagree; 10 = strongly agree): ‘Generally, I am able to discern fake news from real news’; ‘Most of the time, when I see fake news, I am able to detect them easily’; ‘It is very unlikely that a piece of fake news can mislead me’. The three items were averaged to create the final variable (Cronbach’s alpha = .86; $M = 6.54$; $SD = 2.06$).

Table 1. *Descriptive statistics and reliability*

Variable	Number of Items	MIN	MAX	M (SD)	α
Fake New Literacy	3	1	10	6.54 (2.06)	.86
Fake News Corrective Action	2	1	10	5.49 (2.61)	.65
Fake News Exposure	3	1	10	6.04 (2.32)	.88
Media Locus of Control	3	1	10	5.66 (1.97)	.61
Need for Cognition	3	1	10	7.02 (2.39)	.85
Traditional News Use	8	1	10	4.47 (2.12)	.82
Social Media News Use	2	1	10	4.49 (3.01)	.86
Political Ideology	2	1	11	6.46 (2.80)	.92
Political Interest	2	1	10	6.13 (2.72)	.94
Political Knowledge	8	0	8	2.77 (2.03)	.71

Notes. Cell entries are means (M), standard deviations (SD), and Cronbach’s alpha (α). For constructs that consist of only two items, Spearman-Brown Coefficient was calculated.

Fake news corrective action. Respondents were asked how much they agree or disagree (1 = strongly disagree; 10 = strongly agree) with the following statements: ‘When I clearly identify fake news, I tend to report it’ and ‘When a person forwards or shares information that I clearly identify as fake news, I will make them aware of the false information’. The two items were averaged (Spearman-Brown Coefficient = .65; $M = 5.49$; $SD = 2.61$).

Following Maksl et al. (2015), news media literacy was measured by using two dimensions - need for cognition and media locus of control.

Need for cognition. Participants were asked to respond to three items (Maksl et al., 2015; Vraga & Tully, 2019), how much they agree or disagree (1 = strongly disagree; 10 = strongly agree) with the following statements: ‘I don’t like to have to do a lot of thinking’ (recoded); ‘I try to avoid situations that require thinking in depth about something’ (recoded); ‘Thinking hard and for a long time about something gives me little

satisfaction' (recoded) (Cronbach's alpha = .85; $M = 7.02$; $SD = 2.39$).

Media locus of control. Similarly, for media locus of control (Maksl et al., 2015) we asked respondents to respond to how much they agree or disagree (1 = strongly disagree; 10 = strongly agree) with the following statements: 'If I am misinformed by the news media, it is my own behavior that determines how soon I will learn credible information'; 'I am in control of the information I get from the news media'; 'When I am misinformed by the news media, I am to blame'. (Cronbach's alpha = .61; $M = 5.66$; $SD = 1.97$).

Fake news exposure. Based on definitions of fake news (Egelhofer & Lecheler, 2019), respondents were asked how often (1 = never; 10 = all the time) they think they see a) fabricated information that mimics news media content and could mislead readers, b) articles that originate from satirical websites but were transformed by others and put in a misleading context, and c) stories containing deliberately misleading elements making the reader believe it is correct. The three items were averaged to create the final variable (also see Gil de Zúñiga, et al., in press) (Cronbach's alpha = .98; $M = 6.04$; $SD = 2.32$).

Social media news use. We asked respondents how often in the past month they did get a) local news on social media, and b) national news on social media (Spearman-Brown Coefficient = .86; $M = 4.49$; $SD = 3.01$).

Traditional news use. For traditional news use (e.g., Borah et al., 2013) we asked respondents how often in the past month they did get news from the following media sources: a) Network TV news (e.g., ABC, CBS, NBC), b) Local television news (cf. local affiliate stations), c) National newspapers (e.g., New York Times, Washington Post, USA Today), d) Local newspapers (e.g., Oregonian, Houston Chronicle, The Miami Herald), e) MSNBC cable news, f) CNN cable news, g) FOX news, h) Radio news (e.g., NPR, talk shows). The eight items were averaged (Cronbach's alpha = .82; $M = 4.47$; $SD = 2.12$).

Political ideology. We asked respondents where they would place themselves on a scale of 0-10, where 10 = Strong conservative and 0 = Strong liberal on a) political issues and b) on economic issues (Spearman-Brown Coefficient = .92; $M = 6.46$; $SD = 2.80$).

Political interest. People were asked a) how interested they are in information about what's going on in politics and public affairs, and b) how closely they pay attention to information about what's going on in politics and public affairs (1 = not at all; 10 = a great deal). The

two items were averaged to create the final variables (Spearman-Brown Coefficient = .94; $M = 6.13$; $SD = 2.72$).

Political knowledge. We used eight questions to assess respondents' political knowledge. We asked, for example: 'What job or political office does Mike Pence currently hold?', 'For how many years is a United States Senator elected – that is, how many years are there in one full term of office for a U.S. Senator?', 'On which of the following does the U.S. federal government currently spend the least?'. Items were recoded 0 = incorrect or don't know; 1 = correct (KR 20 = .71; $M = 2.77$; $SD = 2.03$).

Demographics. We control for the following demographic variables: Age (18-22 years: 7.1%; 23-35: 25.2%; 36-55: 39.7%; 56 or older: 28%), gender (53.2 % female), education (measured on an eight-point scale where 1 = less than high school and 8 = doctoral degree; $M = 3.7$, $SD = 1.92$), income (annual household income where 1 = 0 to 14,999 and 7 = 2000,000 or more; $M = 3.6$, $SD = 1.47$), and ethnicity or race (75.2% majority).

Analysis

To test the first set of hypotheses and answer our first set of research questions, we run hierarchical OLS regressions. Furthermore, we employed Structural Equation Modeling (SEM) using Mplus to investigate mediating mechanisms and to test how all the variables relate to one another.

RESULTS

First, we tested the relationship between general news media literacy and fake news literacy. Results from regression analysis in Table 1 show that both dimensions of news media literacy – media locus of control ($\beta = .200$, $p < .001$) and need for cognition ($\beta = .071$, $p < .05$) – are positively related to fake news literacy. Hence, our data support H1a and H1b.

Next, results in Table 2 reveal that fake news literacy is positively associated with fake news corrective action ($\beta = .302$, $p < .001$). That is, people who are more fake news literate are more likely to take corrective action when encountering disinformation. These results confirm H2.

RQ1a-b asked if general news media literacy helps taking corrective action. Results in Table 2 indicate that this is not the case: Neither media locus of control ($\beta = .049$, n.s.) nor need for cognition ($\beta = -.024$, n.s.) are directly related to fake news corrective action.

Table 2. OLS regression model predicting fake news literacy and fake news corrective action

	Fake News Literacy	Fake News Corrective Action
<i>Block 1: Demographics</i>		
Age	-.087**	-.101***
Gender (Female=1)	-.038	.027
Education	-.044	.033
Income	.034	-.052
Race (Majority=1)	.030	-.029
ΔR^2	2.9%	2.5%
<i>Block 2: Political Antecedents</i>		
Political Ideology	-.004	-.049
Political Interest	.280***	.092**
Political Knowledge	.051	.003
ΔR^2	14.4%	9.0%
<i>Block 3: News Use</i>		
Traditional News Use	.001	.128***
Social Media News Use	.094**	.048
Fake News Exposure	.160***	.160***
ΔR^2	4.6%	8.5%
<i>Block 4: News Media Literacy</i>		
Media Locus of Control	.200***	.049
Need for Cognition	.071*	-.024
Fake News Literacy	-	.302***
ΔR^2	3.3%	7.9%
Total R^2	24.4%	27.0%

Note. N = 1,336. Cell entries are final-entry ordinary least squares (OLS) standardized coefficients (β). * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 3. Indirect effects on fake news corrective action

Indirect Effects	B
Media Locus Control \rightarrow Fake News Literacy \rightarrow Fake News Corrective Action	.063***
Need for Cognition \rightarrow Fake News Literacy \rightarrow Fake News Corrective Action	.021*

Note. N = 1225. Standardized SEM coefficients (Betas) reported. * $p < .05$; ** $p < .01$; *** $p < .001$.

To test whether MLOC and NFC are indirectly related to fake news corrective action through fake news literacy, SEM was used ($\chi^2 = 0.71$; $df = 1$; $p = .40$; RMSEA = .001, CFI = 1.000, TLI = 1.000, SRMR = .006) with fake news literacy ($R^2 = 4.2\%$) and fake news corrective action ($R^2 = 9.9\%$) as criterion variables.

The model shows that both MLOC and NFC are indirectly related to fake news corrective action. The indirect effects are reported in Table 3.

Results reveal that the relationship between MLOC and fake news corrective action is mediated through fake news literacy ($\beta = .063$, $p < .001$). Similarly, the relationship between NFC and fake news corrective action is mediated through fake news literacy ($\beta = .021$, $p < .05$). These results support H3a and H3b. That is, people who are more news media literate (i.e., higher MLOC and NFC) are more likely to develop specific fake news literacy, which in turn enhances the likelihood to take corrective action when encountering fake news.

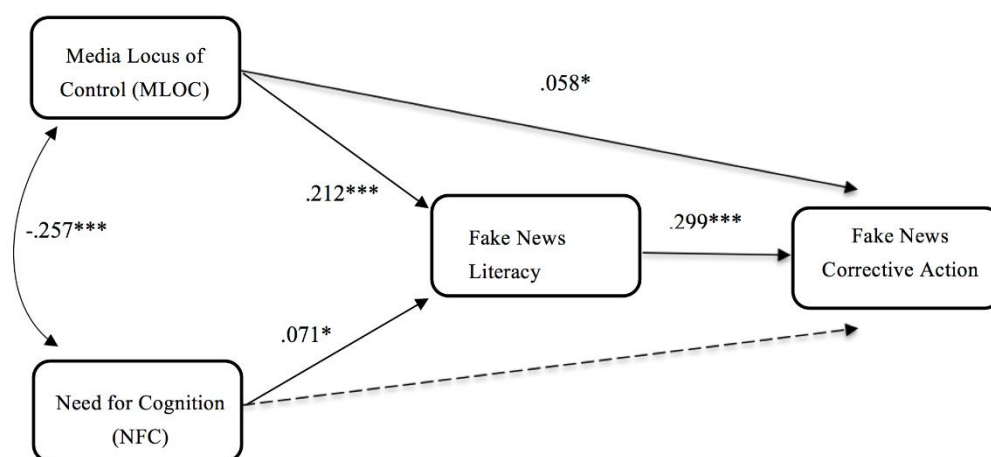


Figure 2. Fixed Effects Structural Equation Model News Media Literacy (Media Locus of Control and Need for Cognition) on Fake News Literacy, and Fake News Corrective Action

Note. N = 1225. Path entries are standardized SEM coefficients (Betas) at $p < .05$ or better. Dashed paths indicate non-significant relationships. The effects of demographics (age, gender, education, income, and race), political antecedents (political ideology, political interest, political knowledge), and news use (traditional news use, social media news use, fake news exposure) have been residualized in the model. Maximum-likelihood estimation. Exogenous variables were brought into the model by mentioning their variances in the MODEL command. Model goodness of fit: $\chi^2 = 0.71$; $df = 1$; $p = .40$; RMSEA = .001, CFI = 1.000, TLI = 1.000, SRMR = .006. Incremental explained variance of criterion variables beyond controls: Fake News Literacy $R^2 = 4.2\%$; Fake News Corrective Action $R^2 = 9.9\%$.

DISCUSSION

The primary aim of this study was to investigate whether or not news media literacy can facilitate corrective action when individuals encounter disinformation. To do so we included two dimensions of news media literacy in our analysis (Maksl et al., 2015), namely media locus of control and need for cognition.

Our results highlight the importance of developing fake news literacy for taking corrective action when encountering disinformation. While we found no direct relationship between need for cognition and fake news corrective action, there is an indirect relationship mediated through fake news literacy. This is in line with recent findings from Jones-Jang and colleagues (2021) showing that neither general media literacy, nor news literacy or digital literacy is significantly related to accurate identification of fake information. This has important implications for media literacy education in the era of post-truth (Friesem & Friesem, 2021). While it is certainly helpful to foster people's general media news literacy skills, when it comes to disinformation, fostering specific fake news literacy skills is crucial since only fake news literacy skills will enable individuals to engage in corrective actions.

Another relevant finding is that younger people are more likely to correct fake news. This makes perfect sense since recent research shows that older people are more likely to share fake news (Guess et al., 2019). They found that people over 65 shared nearly seven times as many articles from fake news domains compared to the younger age group. Accordingly, news media literacy initiatives should specifically address older individuals with their fake news literacy information. To do so, more research is needed on older adults' skills related to Internet use (Hargittai et al., 2018).

Moreover, our results indicate that individuals who consume traditional news are more likely to take corrective action. This finding points out the crucial role of reading newspapers, listening to radio news shows and watching TV news. Those who follow news on traditional media channels are better equipped to combat disinformation; this seems plausible given that they can compare the disinformation with the information they encountered in traditional news. Hence, it should be easier for them to detect disinformation and correct it by using information they got from traditional news use.

As with all research, the current study does not come without limitations. One limitation concerns our measurement of general news media literacy; we were only able to include two of the three dimensions

developed by Maksl et al. (2015). Future studies should also apply the third dimension (i.e., knowledge structures) in order to test whether knowledge about the production of news fosters developing fake news literacy. Similarly, future studies should take into account information literacy (Livingstone et al., 2008) – a concept that has recently been found to help people identifying fake information (Jones-Jang et al., 2021).

Another limitation is that our measurement of fake news literacy is based on self-perceived literacy. Future studies should also measure fake news literacy in terms of knowledge items on production and effects of fake news and differentiate between different platforms where disinformation is shared. While this study focused on general social media as a space where disinformation highly circulates these days (Shu et al., 2020), future studies should take into account other channels and specific forms of disinformation (e.g., political advertising) and also differentiate between different types of social media platforms. For instance, one platform where fake news is circulated heavily and that is only starting to get scholarly attention is WhatsApp (e.g., Canavilhas et al., 2019; Valenzuela et al., 2019). Research is needed to understand how engaging in corrective actions works in private communication spaces where non-informational motives such as sending eye-catching messages and interacting with friends are decisive for sharing misinformation (Chen et al., 2015). Further, information verification literature indicates that self-reported and actual evaluation behavior might differ (Metzger, 2007). Hence, experimental research is needed to investigate how individuals with different levels of fake news literacy act when exposed to disinformation. In this regard, recent research highlights the need to take into account the role of media literacy interventions, warnings about misleading information on social media and fact check tags (Clayton et al., 2019; Geers et al., 2020; Tully et al., 2020a). Another interesting question for future research is to what extent seeing other people taking corrective action when encountering disinformation motivates (bandwagon-effect) or demotivates (bystander theory) other users in taking corrective actions themselves (for an overview of both directions, see Tully et al., 2020b).

Further, this study relies on single national data; cross-cultural research is needed to shed light on exposure to disinformation and the development of fake news literacy in different countries. Media literacy can be seen as “a social, locally situated process, with individuals facing different sets of barriers with regard

to their ability to develop the skills and competencies required to use different types of electronic services” (Sourbati, 2009, p. 254), and research suggests that disinformation and fake news practices are also shaped by national information environments (Bennett & Livingstone, 2018; & Lin, 2020; Humprecht, 2019). Moreover, new forms of disinformation – so called deepfakes – are especially effective in creating uncertainty (Vaccari & Chadwick, 2020) and further research on fake news literacy should pay close attention to it.

Despite these limitations, our study delivers first insights into a highly relevant topic by testing the relationship between news literacy, fake news literacy, and fake news corrective action. It highlights the crucial role of developing specific fake news literacy for enabling people to correct fake news. We need to understand how each of us can take actions to fight disinformation. The findings from our study highlight one important way to combat disinformation, and provide a solid basis for futures studies in this area.

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