

**A Lesson in Fake News: Effects of a Digital Media Literacy Intervention on Dutch High School Students' Ability to Detect Fake News**

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**Abstract:**

As individual news consumers are being confronted with fake news on a regular basis, the call for effective fake news interventions has grown louder. This article tries to replicate the effect of a Digital Media Literacy Intervention, originally researched by Guess et al. (2020), on individuals abilities to discern between real and fake news. An alteration to previous research is the focus on adolescents, a group deemed at high risk for fake news. Additionally, dual process theory is related in this research to investigate whether the intervention has varying results between individuals with a low or high propensity to engage in deliberative thought. To achieve these goals, an experimental study was conducted among 86 Dutch secondary education students at havo- and vwo-level. Results show that the intervention significantly increases participants score on a self-constructed Fake News Recognition Test. However, this increase is not due to a higher score on either real or fake news articles. Test scores related to dual thinking process and the following interaction effect were insignificant predictors for fake news recognition. Limitations of this study are discussed.

*Key words:* Digital Media Literacy, intervention, fake news, dual process theory, secondary education

## **A Lesson in Fake News: Effects of a Digital Media Literacy Intervention on Dutch High School Students**

We live in an age of information. Through the rise of the internet and more specifically social media, individuals living in this era are presented with astronomical and unprecedented quantities of information. This development is not without far-reaching consequences. Traditional media have numerous legal, cultural, social and ethical norms to limit the spread of erroneous information. While not perfect, these journalistic norms provided news consumers with reasonably reliable information (Lazer et al., 2018). Social media has no such norms as any individual can create content and spread it to potentially millions of news consumers. Due to absence of journalistic norms, responsibility of assessing the factual authenticity of news has therefore shifted from various experts to individual consumers (Viviani & Pasi, 2017). The problem is that most individuals are unable to accurately discern between fake and real news (McGrew et al., 2018; Guess et al., 2020).

So, the question is: How can we make news consumers better in correctly assessing authenticity of news and become more resilient to fake news? A method to achieve this goal, proven to be effective in an Indian and American context, is the Digital Media Literacy Intervention (DMLI) from Facebook (2020) as researched in Guess et al. (2020). Through the use of low intensity and simple digital media heuristics, participants are taught how to recognize elements frequently used in fake news (e.g., intentionally upsetting news) without requiring high cognitive effort (Guess et al., 2020). As such, this characteristic of the DMLI might show additional promise for individuals with a low propensity to engage in deep analytical thought, a group shown to be more susceptible to fake news (Pennycook & Rand, 2019; Bago, Pennycook & Rand, 2020).

The aim of this research is to replicate the effects of the DMLI as used by Guess et al. (2020) in a Dutch secondary education student population. Research has shown that younger people are not exempt in their inability to accurately discern between fake and real news. (McGrew et al., 2020). So, this article aims to research whether the DMLI is an effective tool for educators to use in secondary education. Additionally, the effectiveness of this low-intensity intervention is compared between individuals with varying levels of deep cognitive engagement.

## THEORETICAL FRAMEWORK

### **Fake News as a concept**

Due to increase in popularity after the 2016 U.S. elections, fake news has become a buzzword and umbrella term. This resulted in a wide variety in which the term is used, both in the societal and academic debate (Tandoc, Lim & Ling, 2017). Fake news is academically related to deceptive news, false news, misinformation, disinformation, cherry-picking, rumor, fabrication, propaganda, news parody, advertising, clickbait and satire (Tandoc et al., 2017; Ha, Perez & Ray, 2019; Zhou & Zafrani, 2020). This study focusses on news that is fabricated with the intention to deceive consumers for political or economic gain. Intentionally fabricated fake news is especially problematized as being harmful, through their rapid spread and polarizing effects on democratic societies (Tandoc et al., 2017; Guess et al., 2020). Articles containing deliberate misinformation predominantly use presentation strategies aimed at evoking strong emotional reactions through negative, novel and dramatic content (Osatuyi & Hughes, 2018). These characteristics of fake news also partially explain why fake news travels faster and further through human social media users than regular news. Human news consumers are sensitive to emotional and novel information and are therefore more likely to engage in discussing and sharing fake news compared to less spectacular real news (Vosoughi, Roy & Aral, 2018).

The current article aims to empower individual consumer by focusing on two skills they possess, their digital media literacy and propensity to think analytically. The concept of digital media literacy refers to skills, knowledge and attitudes needed to navigate fragmented and complex digital information environments (Eshet, 2004). Interventions grounded in digital media interventions aim to increase these competencies as a major step in combatting fake news, a notion with substantial academic support (Hobbs, 2010; Lee, 2018; Malita & Grosseck, 2018; Hanz & Kingsland, 2019). The second characteristic stems from dual thinking process, which distinguishes between intuitive quick reasoning and deliberative analytical reasoning. Propensity to use deliberative reasoning has shown to be positively related to fake news recognition abilities (Pennycook & Rand, 2019). Each theory's strengths and weaknesses as an intervention tool to increase individual's fake news recognition abilities are discussed below.

## **Digital Media Literacy Intervention**

Skills, knowledge and attitudes that make up digital media literacy are vastly diverse and touches upon technological, cognitive and sociological domains (Eshet, 2004). As a result, overarching interventions aimed at increasing digital media literacy in its entirety are expensive investments in time, effort and money (Walther, Hanewinkel & Morgenstern, 2014; Auberry, 2018; Hanz & Kingsland, 2019). An example is the intervention developed by Vraga and Tully (2016) with complete courses, consisting of multiple 90-minute sessions. An exception to that rule is the Digital Media Literacy Intervention, an adaptation from Facebook's (2020) "Tips to Spot False News" as used by Guess et al. (2020) in an American and Indian context. This low-intensity intervention consists of respectively ten and six digital media tips to discern between real and fake news (see Table 1). These tips are simple rules of thumb, so called heuristics, that can be applied with low cognitive effort in real life. As such, these heuristics were deemed accessible to a large general audience. To examine effectiveness of these tips on people's abilities to discern between real and fake news, Guess et al. (2020) used an experimental-control condition design in an American and Indian context with representative samples for a general population. In both contexts participants from the experimental condition scored significantly better on their fake news recognition test, even if controlled for political positions of the respondents and prior exposure to materials used in the fake news recognition test.

The DMLI does have several limitations. First, its effects decay over time, becoming smaller in size or even insignificant after three weeks in the Indian context. The authors therefore stress the need to regularly reinforce the tips or combine the DMLI with more extensive interventions. Second, in one round the DMLI did not only decrease perceived accuracy of fake news, but also real news. However, the negative effects on perceived accuracy of real news were considerably smaller than those on fake news. So, the authors conclude that the interventions effect on perceived accuracy of fake news is not just an by-product of scepticism towards all news, but an effect by itself. In other words, real news was also perceived as slightly less accurate after the DMLI, but that effect was much stronger for fake news. Additionally, the negative effects for real news were insignificant in the second survey wave (Guess et al., 2020). However, after considering these drawbacks and giving recommendations on how

*Table 1, Digital Media Literacy Intervention as used by Guess et al. (2020)*

Context of study	Main tip	Additional description
United States of America	Be sceptical of headlines	False news stories often have catchy headlines in all caps with exclamation points. If shocking claims in the headline sound unbelievable, they probably are.
	Look closely at the URL	A phony or look-alike URL may be a warning sign of false news. Many false news sites mimic authentic news sources by making small changes to the URL. You can go to the site to compare the URL to established sources.
	Investigate the source	Ensure that the story is written by a source that you trust with a reputation for accuracy. If the story comes from an unfamiliar organization, check their “About” section to learn more.
	Watch for unusual formatting	Many false news sites have misspellings or awkward layouts. Read carefully if you see these signs
	Consider the photos	False news stories often contain manipulated images or videos. Sometimes the photo may be authentic but taken out of context. You can search for the photo or image to verify where it came from.
	Inspect the dates.	False news stories may contain timelines that make no sense, or event dates that have been altered.
	Check the evidence	Check the author’s sources to confirm that they are accurate. Lack of evidence or reliance on unnamed experts may indicate a false news story.
	Look at other reports	If no other news source is reporting the same story, it may indicate that the story is false. If the story is reported by multiple sources you trust, it’s more likely to be true.
	Is the story a joke?	Sometimes false news stories can be hard to distinguish from humor or satire. Check whether the source is known for parody, and whether the story’s details and tone suggest it may be just for fun.
	Some stories are intentionally false.	Think critically about the stories you read, and only share news that you know to be credible.

India	Be skeptical of headlines	False news stories often have catchy headlines in all caps with exclamation points. If shocking claims in the headline sound unbelievable, they probably are.
	Investigate the source	Ensure that the story is written by a source that you trust with a reputation for accuracy. If the story comes from an unfamiliar organization, check their “About” section to learn more.
	Check the evidence	Check the author’s sources to confirm that they are accurate. Lack of evidence or reliance on unnamed experts may indicate a false news story.
	Question information that upsets you.	If you read something that makes you angry or afraid, ask whether it was shared to make you feel that way. And if the answer is yes, think twice before sharing it.
	Look at other reports	If no other news source is reporting the same story, it may indicate that the story is false. If the story is reported by multiple sources you trust, it’s more likely to be true.
	Think about whether the story is a joke.	Sometimes false news stories can be hard to distinguish from humor or satire. Check whether the source is known for parody, and whether the story’s details and tone suggest it may be just for fun.

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to mitigate them, Guess et al. (2020) conclude that the small, low-cost DMLI is an effective and promising tool to reduce the trustworthiness of fake news.

### **Dual thinking process**

Is the DMLI more effective for one individual than the other? To answer that question, it is relevant to discuss dual process theory of reasoning and its effects on a person's ability to recognize fake news. Dual process theory has at its core the main assumption that human reasoning consists of two cognitive processes, System 1 (S1) and System 2 (S2) thinking. S1 reasoning is intuitive, fast thinking which happens involuntarily. S2 reasoning on the other hand is deliberative, slow and happens consciously when a person engages in analytical thinking (Thompson, 2009; Pennycook, Fugelsang & Koehler, 2015). A frequently used scale to measure a person's propensity to either engage in S1 or S2 reasoning is the Cognitive Reflection Test (CRT).

In the context of fake news, the two types of reasoning are found to be significant predictors to fake news recognition. Using a combined CRT-scale from Frederick (2005) and Thomson & Oppenheimer (2016), Pennycook and Rand (2019) found that individuals who engage in cognitive demanding analytical thought during the CRT were significantly less likely to perceive fake news as accurate and more likely to perceive real news as accurate. Pennycook and Rand (2019) state that failing to think is a main culprit as to why people are susceptible to fake news. Pennycook and Rand's (2019) therefore recommend the following:

*Our evidence indicates that people fall for fake news because they fail to think [...] This suggests that interventions that are directed at making the public more thoughtful consumers of news media may have promise. (p. 48)*

However, using dual process theory as a starting point for an intervention is advised against at this point (Evans, 2011). Whilst the concepts of S1 and S2 thinking are relatively strong established in dual process theory, their mechanisms are still being explored. Much work remains to be done on understanding as to what stimulates S2 in favour of S1 thinking (Evans, 2011; Pennycook, Fugelsang & Koehler, 2015; Apeiranthitou & Louka, 2020).



So, what role can dual thinking process play in the DMLI of Guess et al. (2020)? Large portions of social media users are unwilling or unable to engage in deep cognitive thought to assess credibility of digital media (Hanz & Kingsland, 2019). When relating this to dual process theory, it is likely that S1-reasoning is therefore much more frequent when individuals browse digital media. Acknowledging these consumer deficiencies, the DMLI is aimed at stimulating assessment of credibility through simple digital media heuristics (Guess et al., 2020). It can help passive news consumers to become slightly more thoughtful consumers without needing them to engage in deep analytical thought. Consequently, the recommendation of Pennycook and Rand (2019) can be incorporated without expecting considerable changes in a person's cognitive reasoning style. It is likely that individuals with a higher propensity towards S2-reasoning are already familiar with the DMLI or other simple heuristics when they assess news. It is therefore possible that the simplicity of the DMLI has the most educational value for individuals who are either unable or unwilling to engage in S2 reasoning, the group that is most susceptible for fake news (Pennycook & Rand, 2019).

### **Present study**

This study has two major goals. The main goal is to replicate the DMLI's effectiveness as Guess et al. (2020) found in an American and Indian context. In this study two relevant alterations to the research population have been made. First, the study will take place in a Dutch context. According to Guess et al. (2020) spread of fake news is especially rampant in the United States and India and these countries are thus most in need of interventions. Whilst less frequent, fake news is also relevant in the Netherlands (Hameleers, 2020). Furthermore, Facebook did not offer the intervention in the Netherlands, nor was it translated to Dutch (Guess et al., 2020). Introducing the intervention in the Netherlands could thus provide societal and academic gains.

A second alteration is focus on secondary education students. It is generally assumed that elder generations are particularly vulnerable to the spread of fake news as they are often unfamiliar with workings of social media (Lee, 2018). Younger generations on the other hand grew up in a digital environment and are as 'digital natives' better equipped to evaluate online information (Lee, 2018; Hanz & Kingsland, 2019). However, the ability of middle school, high school and college students to

effectively evaluate online claims, sources and evidence has been found to be lacking. Students continuously failed to question the legitimacy of both the content and the source of digital messages they were exposed to (McGrew et al., 2018). This is problematic as young generations are highly engaged with digital social media (Lenhart, Purcell, Smith & Zickuhr, 2010; Mindich, 2010) and therefore more exposed to fake news. Thus, this study therefore aims to answer the following research question:

*To what extent does the Digital Media Literacy Intervention influence fake news recognition abilities of Dutch secondary education students?*

The second goal is to research whether differences exist in DMLI's effects between individuals with low and high propensity to think analytically. The works of Guess et al. (2020) and Pennycook and Rand (2019) suggest that the DMLI can be especially beneficial for those individuals susceptible to fake news, further increasing the intervention's potential. This research aims to provide empirical evidence for this possibility.

**Hypotheses.** Based on the theoretical framework, three main hypothesis were tested. The first goal of this research is to replicate Guess et al. (2020) significant positive effect of the DMLI on accurate discernment between fake news and real news. In this research, accurate discernment between fake and real news is measured using a self-constructed Fake News Recognition Test (FNRT). The first hypothesis is as follows:

**H1a:** *Participants who received the DMLI score significantly better on the FNRT than participants who did not.*

Guess et al. (2020) noted a downside of the DMLI. While it significantly lowered perceived accuracy of fake news articles, a small but measurable side effect was reported of the DMLI also reducing perceived accuracy of real news articles due to increased caution when assessing news. As this effect was considerably smaller than that on fake news, it is expected that on average FNRT-scores will increase after being exposed to the DMLI. It is thus expected that receivers of the DMLI perform better at correctly identifying Fake News Articles (FNA), but worse for Real News Articles (RNA).

**H1b:** *Participants who received the DMLI score significantly better in correctly identifying fake news articles.*

**H1c:** *Participant who received the DMLI score (significantly) worse in correctly identifying real news articles.*

The second goal of this research is to recreate the effects of Pennycook and Rand (2019). They found that Cognitive Reflection Test performance is a significant predictor for performance. First, the relationship of Pennycook and Rand (2019) must be replicated. Therefore, the second main hypothesis is:

**H2a:** *CRT-scores are significantly and positively correlated with FNRT-scores.*

Additionally, Pennycook and Rand (2019) state high CRT-scores significantly predict reduced perceived accuracy of fake news articles, whilst increasing perceived accuracy of real news articles. This is in contrast to the DMLI where the intervention decreases perceived accuracy of both types of news. Two sub hypotheses are:

**H2b:** *CRT-scores are significantly and positively correlated with FNA-scores.*

**H2c:** *CRT-scores are significantly and positively correlated with RNA-scores.*

The third main hypothesis looks at a possible moderation effect of CRT-scores on the DMLI relationship with fake news recognition. According to Pennycook and Rand (2019) failure to engage in analytical thought is one of the main culprits as to why individuals are susceptible for fake news. The DMLI can potentially counter this effect with its simple heuristics which are easy to use and do not require substantial cognitive demanding analytical reasoning (Guess et al. 2020). In this research it is thus hypothesized that the DMLI has a stronger effect on individuals with lower CRT-scores.

**H3a:** *The effect of DMLI on FNRT-scores is significantly higher for individuals with lower CRT-scores.*

**H3b:** *The effect of DMLI on FNA-scores is significantly higher for individuals with lower CRT-scores.*

**H3c:** *The effect of DMLI on RNA-scores is significantly higher for individuals with lower CRT-scores.*

## METHODS

### Research design

To increase the chance of successful replication, this research follows the design of Guess et al. (2020) by using an experimental design. With this design, causal relations between variables can be researched (Neumann, 2014). In this study it is hypothesized that the dependent variable, FNRT-scores, is significantly positively influenced by the DMLI. Respondents were randomly divided in an experimental condition and a control condition with the former receiving the DMLI prior to making the Fake News Recognition Test.

### Participants

135 students took part in the experiment. However, only 86 participants provided usable data. One respondent finished all real news articles, but did not finish the fake news articles and the CRT. So, with some analyses with RNA the  $N = 86$ , but for the main analyses the research population is  $N = 85$ . Of these respondents 35 were male and 50 were female, with their ages ranging from 16 to 19 ( $M = 16.52$ ,  $SD = .607$ ). Of these respondents, 18 were havo-students and 68 vwo-students. The control condition and experimental condition were roughly equally distributed, 45 in the former and 42 in the latter. In the control condition, 36 respondents were vwo-students and 9 havo-students. The experimental condition consisted of 32 vwo students and 9 havo-students.

### Instrumentation and Materials

This experiment uses three main instruments. The Digital Media Literacy Intervention is the main predictor in this study. A second predictor variable, propensity to analytical reasoning is measured using a CRT. To measure the fake news recognition, a Fake News Recognition Test was self-constructed as dependent variable, similar to tests used in Pennycook and Rand (2019) and Guess et al. (2020). Education level was included as controlling variable.

**Digital News Media Literacy Intervention.** Participants in the experimental condition receive a translated version of the DMLI in text form. The original DMLI consisted of 10 tips in the American context and six tips in the Indian context. The Indian tips showed almost complete overlap with the American intervention. Only the tip *Question information that upsets you* was unique. This tip is included in this version of the DMLI as it is deemed relevant for fake news recognition. This DMLI thus consist of 11 tips (see Table 3).

**Cognitive Reflection Test.** The CRT is a translated version from the one used in Pennycook and Rand (2016) and combines two CRTs, one designed by Frederick (2005) and one from Thomson and Oppenheimer (2016). The former was deemed to favour mathematical reasoning skills, so Thomson and Oppenheimer (2016) created a second test that favours more neutral reasoning skills. The combined scale consists of seven items which all evoke an intuitive answer. The items require deliberative thought to override the intuitive answer and give the right answer. A higher number of correct answers is therefore an indication of ability/willingness to engage in deliberative thought (Frederick, 2005).

One substantial alteration to Pennycook and Rand's (2019) methodology was made in this research. In their research design, the authors used an open-ended answer format for CRT-items. Guess et al. (2020), who also used the CRT-scale for including intuitive cognitive style in their analysis, used a four-option multiple choice answer format. Sirota and Juanjich (2018) researched whether different answering formats, open-ended, two item and four item multiple choice, results in differences in correct responses, reliability and predictive/construct validity. They found no significant differences between the formats, save for a faster response time for multiple-choice formats. Sirota and Juanjich (2018) recommend using the four-option multiple-choice to reduce time strain on the participants. As the questionnaire in this research was estimated to be rather long, which it was with a mean duration of 19 minutes ( $M = 1155.89$  seconds,  $SD = 41.592$ ), the decision was made to use the four-option multiple-choice format of Guess et al. (2020).

**Fake News Recognition Test.** Pennycook and Rand (2019) and Guess et al. (2020) use similar headline rating tasks as their main measurement of fake news recognition abilities. The current article follows their example in procedure, measurement and political content. The headline rating task consists of 28 Dutch news articles (See Appendix A). Similar to Pennycook and Rand (2019) and Guess et al.

(2020), the articles are distributed evenly, 14 real and 14 fake. Fake articles are debunked by at least one party factchecker. Participants have to rate their perceived accuracy of a news article, which consists of a headline, picture, source and introduction (see Figure 1 and 2).

Both Pennycook and Rand (2019) and Guess et al. (2020) used the same four-point answer scale (1-not at all accurate to 4-very accurate) for the following question: ‘To the best of your knowledge, how accurate is the claim in the above headline?’. This question and the answer were translated to Dutch which required some changing to the wording. The translation is as follows: ‘In hoeverre denk jij dat de bewering in de titel feitelijk kloppend is’ which translates to English to ‘To what extent do you think that the claim in the title is factually correct?’ The second and third answer on the scale were also slightly altered to make them more concise in Dutch.

Pennycook and Rand (2019) chose a continuous scale variable (1-4) over a dichotomous scoring variable (right answer – false answer) for their analysis as it was ‘more appropriate’. In this research a percental score (0-100) based on the sum score of all dichotomous scores (0-28) is deemed more appropriate as this can be used to assess participants performance, rather than perceived accuracy of real and fake news. This was done similarly for the Fake News- (FNA) and Real News- (RNA) articles into two separate scales with each 14 items. The continuous scale variables were included in analysis for comparison. Correlations between both options of the FNA- ( $r = .880$ ) and RNA-scale ( $r = .905$ ) are significantly correlated ( $p = .000$ ).



Figure 1, Example of a Fake News article



Figure 2, Example of a Real News article

**Educational level.** Preliminary analyses showed that educational level is a strong significant predictor for FNRT- and FNA-scores (see Appendix B). This item was thus added to the model as a control variable. The scale has seven categorical answers, but only data from ‘havo’ and ‘vwo’ were added.

## **Procedure**

The [experiment](#) is spread through civic, history or Dutch language teachers in secondary education using convenience sampling. They provide the link of the online Qualtrics questionnaire to their students as voluntary homework or performed the experiment during class. Prior to participation, respondents are required to read the informed consent form (see Appendix A). Due to ethical considerations, the minimum age to participate was 16 as this is the age that adolescents are permitted to give active consent for non-invasive research without the need for parental consent (FERB, 2020). Participants are then asked to give their active consent to participate. Two additional demographic questions are asked. First, participants must select what their educational level is. Answers other than havo or vwo were removed from the dataset to prevent contamination of the research population. Second, the gender of the participants was asked to ensure that the final population is reasonably balanced.

The participants were randomly assigned in the experimental or control condition. The experimental condition received the DMLI, followed by the FNRT and finish with the CRT. The control condition starts with the FNRT, then the CRT and end with the DMLI to ensure they receive the same educational benefit as the experimental condition. After completion of the tests, both conditions receive a debriefing with their score and wrong answers. After completion of the experiment, the participants can navigate to a [second module](#) that provides justification for why an article was considered real or fake news.

## **Data Analysis**

**Power Analysis.** Power analysis was conducted a priori to the data collection using G\*Power 3.1.9.7 to estimate the minimal necessary sample size to make reliable claims about the hypotheses (Mayr, Erdfelder, Buchner & Faul, 2007). Several power level analysis with a varying number of

predictors were performed with alpha significance level of .05, a medium effect size ( $f=.15$ ) and a desired power of 0.80, set on Linear multiple regression: Fixed Model,  $R^2$  deviation from zero. Results showed that  $N = 85$  of this sample allows for a multiple regression model with four predictors.

**Linear Regression Analysis.** The main statistical method of this research, used to test the hypotheses, consists of two multiple regression analyses models. With a regression analysis, not only can be established whether a significant effect exists, but also estimates how strong this effect is (Weinberg & Abramovitz, 2008). This is essential for providing a thorough answer for the research question. Multiple regression analysis in SPSS v.27 was used because it was expected that both DMLI and CRT-scores are significant predictors. Therefore, the models include both variables as predictors to control for each other's effect.

The first multiple regression model tested the effects of the DMLI and CRT-scores on FNRT-scores and the two FNA- and RNA-subcales with education as controlling variable. The second model was used to investigate possible interaction effects between CRT-scores and the DMLI, using moderating multiple regression analysis. The DMLI, CRT-scores and their interaction variable acted as predictors and educational level as controlling variable. Similar to previous analyses, this model is tested three times with FNRT-, FNA- or RNA scores as dependent variable. Lastly, all analyses are also run with the continuous mean scales to check for differences.

**Psychometric Quality Analyses.** Quality checks were made by testing psychometric quality of the CRT-, FNA- and RNA-scales. Psychometric quality of scales concerns a variety of validity and reliability analyses. In this research construct validity and reliability are statistically measured. As this research only used a single data sample, testing predictive validity is outside the scope this study (Lin & Yao, 2014). Construct validity concerns the measured factor structure and how it relates to theoretical expectations. According to Blacksmith et al. (2019) one or two factors are empirically expected for sound construct validity of the CRT. Factor structure is measured Confirmatory Factor Analysis (CFA) in R i386.3.6.2. The criteria are  $p > 0.05$  for the goodness-of-fit test,  $> 0.90$  for both the TLI and CFI test and  $< 0.10$  for the RMSEA test (Hooper, Coughlan & Mullen, 2008). The CRT with seven items was not found to be a good fit on the data (see Table 2). Inspection of the factor loadings revealed that CRT\_7 was deviant from the other items. CFA confirmed the CRT-model



without CRT\_7 as a good fit. A possible cause for the deviant behaviour of CRT\_7 and implications are discussed later.

*Table 2, CFA results of CRT-factors*

	<i>p</i>	CFI	TLI	RMSEA
CFA with CRT_7	0.022	0.806	0.709	0.083*
CFA without CRT_7	0.222*	0.949*	0.914*	0.06*

\*Indication of a good model fit

The second psychometric attribute is reliability. In the sample of Pennycook and Rand (2019) Cronbach's Alpha was used to measure reliability for the seven item CRT which was found to be sufficiently reliable ( $\alpha = .75$ ). However, whilst popular,  $\alpha$  has several considerable limitations (Sijtsma, 2009), especially in skewed distributions (Sheng & Sheng, 2012; Trizano-Hermosilla & Alvarado, 2016). As FNA-scores were found non-normally distributed, relying only  $\alpha$  was thus not deemed wise. Other more preferable options to  $\alpha$  were also used, such as omega coefficient ( $\omega$ ) (Trizano-Hermosilla & Alvarado, 2016) and Gutmann's lambda-2 ( $\lambda_2$ ) (Osburn, 2000). To estimate the reliability of the scales, all three measures were used.  $\alpha$  and  $\lambda_2$  were analysed in SPSS v.27 and  $\omega$  in R i386.3.6.2. The guidelines of Commissie Testaangelegenheden Nederland (COTAN) were used for interpretation of the scores. COTAN states that for research on group level  $\rho^2_{XT} < .60$  is insufficient,  $.60 < \rho^2_{XT} < .70$  is sufficient and  $\rho^2_{XT} > .70$  (Evers, Lucassen, Meijer & Sijtsma, 2018). Cronbach Alpha, lambda 2 and omega analyses deemed the CRT-scale sufficient reliable and FNA-scale to be good. RNA was deemed sufficient reliable according to lambda 2, but not alpha and omega (see Table 3). Item analysis using item-rest correlation and alphaIfDeleted measures shows that especially RNA\_12 and RNA\_13 and to a lesser degree RNA\_1 are problematic (see Table 4). A logical explanation can be given for RNA\_13 as this item has a source called 'klimaatgek.nl' (climate fool), which in pilot testing was remarked as 'unprofessionally sounding'. So based on item analysis and this explanation, item RNA\_13 was removed from the RNA-scale. RNA\_1 and 12 were kept as the scale was made sufficiently reliable and no logical explanation could be given for their deviant item scores. Additionally, CRT\_7 was removed

from the CRT-scale. This item was already problematic based on CFA and item analysis provided a potential explanation as the item is deemed unreliable.

*Table 3, Results reliability analyses*

<b>Scale</b>	<b><math>\alpha</math></b>	<b><math>\lambda_2</math></b>	<b><math>\omega</math></b>
CRT	.639*	.66*	.66*
FNA	.739**	.76**	.74**
RNA	.575	.62*	.58
<b>After removal of CRT_7 and RNA_12</b>			
CRT	.691*	.700*	.72*
RNA	.622*	.644*	.61*

\*Sufficient  $60 < \rho^2_{XT} < .70$

\*\*Good  $\rho^2_{XT} > .70$

*Table 4, Item analysis unreliable RNA- and CRT-items*

<b>Item</b>	<b>Item-rest correlation (<math>&lt; .30</math>)</b>	<b>alphaIfDeleted</b>
RNA_1	0.1037870458	0.5790714*
RNA_12	0.0006841755	0.6046160*
RNA_13	-0.0701294113	0.6096071*
CRT_7	-0.09065508	0.6670455**

\*  $\alpha_{RNA}$  (.575)

\*\*  $\alpha_{CRT}$  (.639)

**Assumptions.** Eight assumptions for general regression models (Osborne & Waters, 2002; Field, 2017) and regression models with dichotomous variables (Laerd Statistics, n.d.) were checked using several statistical analyses to avoid erroneous conclusions. Most assumptions were passed, safe for skewness in the FNA-scale towards higher scores. Outliers presents in the data were thus all lower scores. The most severe outlier, Case 1, was identified as an influential case. Closer inspection of the participant's duration time revealed that the participant completed the experiment in six minutes while the mean duration was 19 minutes. It is therefore highly likely that this respondent did not take the experiment seriously. Based on this and its influence, Case 1 was removed, substantially reducing

skewness. More outliers were found, but they were not influential and after their removal FNA-scale remained skewed. A more encompassing rapport can be found in Appendix #.

## RESULTS

Scores on the Fake News Recognition Test ranged from 46.4% to 92.7% ( $M = 72.00$ ,  $SD = 10.75$ ). Considerable differences in mean scores were found between the control condition ( $M = 69.47$ ,  $SD = 11.40$ ) and the experimental condition ( $M = 74.71$ ,  $SD = 9.39$ ). Respondents performed well on the Fake News Articles with  $M = 82.23$ ,  $SD = 13.48$ . Differences were also found for the FNA between the control ( $M = 80.03$ ,  $SD = 14.50$ ) and the experimental condition ( $M = 84.15$ ,  $SD = 12.11$ ). Lastly, Real News-scores were considerably lower ( $M = 61.44$ ,  $SD = 18.41$ ), but the pattern of differences between the control ( $M = 57.94$ ,  $SD = 20.06$ ) and the experimental condition ( $M = 65.29$ ,  $SD = 15.78$ ) remains. The results are shown in Figure 3.

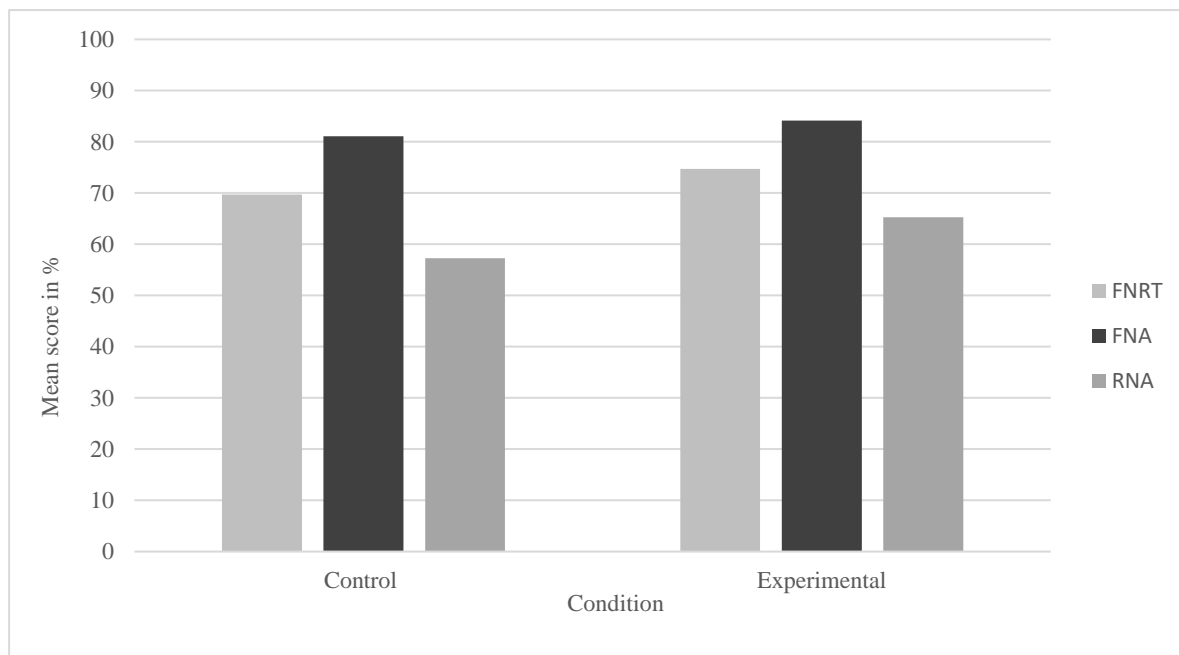


Figure 3, Mean differences of FNRT-, FNA- and RNA-scores

### Impact of the DMLI and CRT

With differences in mean scores between the two conditions established, the impact of the Digital Media Literacy Intervention was then analysed. In line with H1a hypothesis, it was found that

the DMLI has a significant positive effect on FNRT-score, predicting an average higher score of 5.46% ( $R^2 = .144$ , adjusted  $R^2 = .113$ ,  $F(3, 81) = 4.551$ ,  $p = 0.020$ ). However, this effect was not found for H1b and H1c hypothesis. Whilst positive, the effect of the DMLI on Fake News Articles score is non-significant ( $R^2 = .094$ , adjusted  $R^2 = .061$ ,  $F(3, 81) = 2.805$ ,  $p = 0.126$ ). Similar results were found for Real New Articles ( $R^2 = .056$ , adjusted  $R^2 = .021$ ,  $F(3, 81) = 1.587$ ,  $p = 0.093$ ). Incomplete case 50 is not included in this model, because CRT-test was not made. Without CRT as a predictor and with RNA-score of case 50, the effect becomes almost significant for RNA ( $R^2 = .073$ , adjusted  $R^2 = .051$ ,  $F(2, 83) = 3.289$ ,  $p = 0.056$ ). In addition, it is interesting to note that the DMLI has a positive coefficient for RNA, in contrast to the H1c directionality. Based on significance, H1a hypotheses is maintained while

*Table 4, DMLI and CRT on FNRT-, FNA- and RNA-scores*

	<b>B</b>	<b>SE</b>	<b><math>\beta</math></b>	<b>P</b>
<b>FNRT</b>				
(Constant)	61.132	3.856		.000
DMLI	5.456	2.202	.255	.015*
CRT	.036	.044	.087	.407
Education	7.064	2.779	.264	.013*
<b>FNA – Percentage score</b>				
(Constant)	71.281	4.976		.000
DMLI	4.398	2.841	.164	.126
CRT	.025	.056	.048	.656
Education	8.533	3.586	.255	.020*
<b>FNA – Mean scale</b>				
(Constant)	1.972	.132		.000
DMLI	-.200	.075	-.279	.010*
CRT	.000	.001	.004	.973
Education	-.157	.095	-.176	.103
<b>RNA – Percentage score</b>				
(Constant)	50.983	6.715		.000
DMLI	6.514	3.835	.184	.093

CRT	.048	.076	.085	.532
Education	5.596	4.840	.126	.251
<b>RNA – Mean scale</b>				
(Constant)	2.519	.109		.000
DMLI	.112	.062	.193	.078
CRT	.000	.001	.020	.856
Education	.104	.079	.144	.190

---

\* $p < .05$  \*\* $p < .01$

H1b and H1c are rejected. It must however be noted that results differed when using mean scale variables. The DMLI was found to be a significant predictor for Fake News Articles ( $R^2 = .104$ , adjusted  $R^2 = .071$ ,  $F(3, 84) = 3.138$ ,  $p = .010$ ) but not for Real News Articles ( $R^2 = .057$ , adjusted  $R^2 = .022$ ,  $F(3, 84) = 1.632$ ,  $p = .078$ ).

For the second hypothesis, the impact of the CRT on the dependent variables was analysed. In contrast to H2a, b and c, CRT-score was not found to be a significant predictor for FNRT- ( $p = .407$ ), FNA- ( $p = .656$ ) and RNA-scores ( $p = .532$ ). The entire H2 hypothesis is therefore rejected. No differences were found between the percental and the mean scale. Table 4 shows the unstandardized and the standardized regression coefficients, the standard error and level of significance of H2.

### **Interaction between the DMLI and CRT-scores**

The third and final hypothesis focused on a possible moderating relationship between the CRT-scores, the DMLI and dependent variables. Initial multiple linear regression analysis indicated multicollinearity (see Appendix B), so the variables were centred on their mean. In contrast to H3a hypothesis, the interaction variable was found not to be a significant predictor for FNRT-scores ( $R^2 = .171$ , adjusted  $R^2 = .130$ ,  $F(4, 80) = 4.134$ ,  $p = .110$ ). Similar insignificant effects were found for the FNA-scores ( $R^2 = .109$ , adjusted  $R^2 = .064$ ,  $F(4, 80) = 2.445$ ,  $p = .252$ ) and RNA-scores ( $R^2 = .067$ , adjusted  $R^2 = .020$ ,  $F(4, 80) = 1.432$ ,  $p = .328$ ). As such, all H3 hypotheses need to be rejected. No differences were found

between the percental and mean scale variables. Table 5 shows the unstandardized and the standardized regression coefficients, the standard error and level of significance of H2.

*Table 5, Interaction effect on FNRT- and RNA-scores*

	<b>B</b>	<b>SE</b>	<b>β</b>	<b>p</b>
<b>FNRT</b>				
(Constant)	65.706	2.446		.000
DMLI*CRT	-.140	.086	-.172	.110
DMLI	6.444	2.264	.301	.006**
CRT	.032	.043	.076	.463
Education	7.651	2.776	.286	.007**
<b>FNA</b>				
(Constant)	74.650	3.181		.000
DMLI*CRT	-.130	.112	-.127	.252
DMLI	5.315	2.945	.198	.075
CRT	.021	.056	.040	.710
Education	9.077	3.610	.271	.014*
<b>RNA</b>				
(Constant)	56.761	4.303		.000
DMLI*CRT	-.150	.152	-.111	.328
DMLI	7.572	3.983	.214	.062
CRT	.043	.076	.062	.575
Education	6.224	4.883	.141	.206

\* $p < .05$  \*\* $p < .01$

## DISCUSSION

This research mainly aimed to find whether a short Digital Media Literacy Intervention with 11 simple tips, as previously used by Guess et al. (2020) can significantly increase Dutch secondary education student's ability to recognize fake news. An additional aim was to research whether the

intervention has significantly differences in strength for individuals with either a propensity to think intuitively or analytically. To this end, findings of Pennycook and Rand (2019) had to be replicated in which a higher score on the Cognitive Reflection Test led to more accurate discernment between real and fake news. Results of this study showed that the DMLI made students overall significantly better at accurately discerning between real and fake news. However, analyses with the subscales showed that this effect is not explained by a higher score in recognition of either real or fake news. Using scale variables, the DMLI was found to significantly reduce perceived accuracy of fake news, but not real news. CRT-scores were not found to be a significant predictor for fake news recognition. A significant interaction effect between these variables was not found.

### **Impact of Test Characteristics on the DMLI**

Whilst the DMLI had a significant impact on the overall score of the FNRT, it tells us very little what educational benefits students got from it. They did not significantly become better in recognizing real or fake news, as shown by analyses with the subscales. This research identifies three main possible explanations as to why the results of Guess et al. (2020) could not be replicated.

The first explanation is based on the problem of *selective attrition* of participants. Participant attrition means that participants quit filling in the experiment before completion and selective means that some participants are more likely to drop out than others. This has grave consequences for validity of experimental designs as a selection bias will occur in the final data. Zhou and Fishbach (2016) found that online experiments are especially vulnerable to selective attrition as quitting online participation has lower sunk and social cost than participation while physically present. This study had both conditions due to Covid-19 restrictions. Based on communication with participating teachers, it is estimated that roughly half of the respondents made the experiment from home with the others participating in school during lessons. During lessons, teachers could reinforce students to complete the experiment but the online condition lacked such control. This resulted in this study suffering from heavy attrition. Originally 135 students participated, but only 86 completed the experiment sufficiently, an attrition rate of 36.3%. This is unsurprising as the experiment was rather long and intensive with a mean duration of 19 minutes and high volumes of reading. These characteristics make it also likely that

selective attrition occurred among students who were unwilling to go to the trouble of reading all the news articles and forming a judgement. This is problematic as this is exactly the group that Pennycook and Rand (2019) found to be susceptible to fake news. It would explain the noticeably high FNA-scores, the low scores outliers and its skewness to higher scores as mostly students who were willing in deeper analytical thought completed the experiment. It was hypothesized that especially individuals with propensity to intuitive thought could have benefited from the DMLI. Due to their absence, selective attrition could thus have seriously impacted the causal relation of the DMLI on fake news recognition.

The second explanation concerns the high number of fake news articles in the experiment. The Fake News Recognition Test contained a high fake news to real news ratio, equally distributed with 14 articles each. It is possible this high number of fake news articles made respondents more cautious. In such case, the control condition could have also been primed to engage in more analytical thought instead of 'lazy' thinking. This would be in line with Pennycook and Rand (2019) findings and could have negated the effects of the DMLI. This possibility is supported by the mean scores of the experimental condition and the control condition (Figure 3). Mean score for fake news is roughly 20% higher than for real news for both conditions. This might be an indication that participants were primed to be highly sceptical towards all news articles, favouring fake news recognition but unfavourable for real news recognition. A counterargument to this explanation would be that Guess et al. (2020) also used an equal distribution of real and fake news articles and in their study the DMLI had a significant effect.

The third explanation concerns differences in scales. Pennycook and Rand (2019) and Guess et al. (2020) both used a continuous variable with four answer option, which is more nuanced than a dichotomous two answer option. The latter was preferred in this study as percentage scores provided assessment on student performance. While both variables were highly correlated, results differed between the two scales. The DMLI had no significant impact on FNA-scores, but it did on the mean scale. This means that while the DMLI did significantly reduce perceived accuracy of fake news in this study similarly to Guess et al. (2020), this effect was lost when analysing with less nuanced dichotomous percental scoring.



### **Cognitive Reflection Test and the Interaction effect**

Unlike Pennycook and Rand (2019), this study did not find CRT-scores of participants to be a significant predictor for fake news recognition. There are two differences in research design that might have contributed to this. First of all, Pennycook and Rand (2019) only used a photo, source and headline for their materials, whereas this study also provided additional text. It might be that this type of additional information influences individuals' perceptions of news articles in such a way that it disturbs the relationship between CRT-scores and fake news recognition. A second difference was between the explicit focus on political left-right news items by Pennycook and Rand and the more diverse topic selection of items in this research. In their research they used news articles that exclusively focused on American left or right politicians. In this study news articles not only discussed left and right politicians but also government policy, Covid-19 measures, foreign news and other controversial topics. There are also very substantial differences between the American two party and the Dutch parliamentary political systems (Hague, Harrop & McCormick, 2016) that makes the CRT and dual thinking process in general less suited as predictor in a Dutch context. Considering the interaction effect between the DMLI and CRT-scores, this study failed to find empirical evidence. This was unsurprising due to partial insignificance of the DMLI and the insignificance of the CRT-scores on fake news recognition.

### **Implications**

Findings from this study has limited theoretical but some interesting practical implications for fake news researchers and educational practitioners interested in the topic. As this study mostly tried to recreate effects of previous research, it provides limited new information for fake news research. The idea of using dual thinking process as a method to investigate different levels of effectiveness of an intervention has theoretical potential, but no empirical evidence was found to support it. This study has practical implications as it takes a first step towards introducing fake news research into the classroom and making adolescents less susceptible to fake news. The results of this study provide an ambiguous answer to the question if the DMLI is an effective tool for educational practitioners, but it supports the general notion of Guess et al. (2020). It is a small intervention that is quick, cheap and easy to apply. This makes the DMLI perfect for introductory education on fake news. However, due to its low intensity

it is unrealistic to expect that it makes recipients fully immune for fake news. Among the five dependent variables used in this research, the DMLI explained only between 2.4% and 7.9% of the variance. This is evident in that even when the effect is significant, score only increases by less than 8%. As such, it is recommended that the DMLI is used in conjunction with more intensive interventions on fake news and (digital) media literacy.

### **Limitations**

When drawing from this study, several limitations should be considered. The sample has little diversity in educational level. The majority (79%) of the participants were vwo-students with the remaining students at havo level. As educational level was found to be a significant predictor, it is possible that a population with a wide variety of educational levels offer additional insight in fake news recognition among secondary education students. Secondly, several test design characteristics have been discussed as problematic before. Some have been mitigated as best as possible, such as reliability issues in the RNA-scale and factor structure in the CRT-scale. Others such as selective attrition due to the lengthy experiment and lack of oversight and non-normal distribution of the FNA-scale could not have been corrected and these must be taken into consideration when interpreting this study.

### **Future research**

Whilst the results are somewhat disappointing, this research offers interesting avenues to explore in the future. A first step would be to replicate this study in more ideal experimental conditions to reduce potential selective attrition and with more sensitivity to contextual differences between the United States/India and the Netherlands. Secondly, even though the interaction effect was found to insignificant, negative coefficients on all dependent variables gives some merit to the idea that the DMLI is especially helpful for individuals who are less willing or able to engage in deep analytical thought. Future research could further explore this idea and perhaps use alternatives to the Cognitive Reflection Test which has its validity problems (Campitelli & Gerrans, 2014; Haigh, 2016; Pennycook et al., 2016; Blacksmith et al., 2019).

## **Conclusion**

Fake news is a growing problem and practical tools to help young people to become less susceptible are needed. This study failed to give a definitive answer if the Digital Media Literacy Intervention is an effective tool for secondary education students, but it provided valuable insight in how the intervention works and how it can best be measured. Researchers and practitioners are encouraged to continue building on this and previous work to create a resilient generation against misinformation and fake news. As the old saying goes: *a democracy is only as strong as its populace is informed.*

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**Appendix A, Questionnaire**

**A Lesson in Fake News: Effects of a Digital Media Literacy Intervention on Dutch High School  
Students' Ability to Detect Fake News**

Questionnaire and Materials

Justin Zonneveld

Master Thesis

Thesis Supervisor: Eva Janssen

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**Please note that this document is bilingual. Sections written in English are directed at you, the reader. Sections in Dutch were written for the participants and are part of the questionnaire.**

## **Informed Consent**



## Informatiebrief Onderzoek

Beste deelnemer,

Je staat op het punt deel te nemen aan mijn afstudeerscriptie voor de Master Educational Sciences aan de Universiteit Utrecht. Voor mijn scriptie onderzoek ik in hoeverre Nederlandse havo- en vwo-leerlingen in staat zijn het onderscheid te maken tussen echt en nepnieuws. Graag wil ik je middels deze brief een duidelijk beeld geven wat deelname precies inhoudt, wat er van jou wordt verwacht en wat je van mij kan verwachten.

**Titel:** Een Les in Fake News: Effecten van een Digitale Media Interventie op Nederlandse Middelbare Scholieren' s Vermogen om Nepnieuws te herkennen.

### Hoe ziet deelname aan dit onderzoek eruit?

#### *Experimentele groep:*

Dit onderzoek zal bestaan uit vier onderdelen. Allereerst word je gevraagd enkele achtergrondvragen in te vullen waarmee benodigde demografische data worden verzameld voor dit onderzoek. Als tweede krijg je 11 tips aangeboden die je kan gebruiken om nepnieuws te herkennen. Neem de tijd om deze zorgvuldig door te nemen. Als derde krijg je 28 koppen te zien van bestaande nieuwsartikelen. Geef bij elk artikel aan (a) of je het nieuwsartikel eerder hebt gezien en (b) jij denkt dat het nieuwsartikel accuraat is. Als vierde en laatste onderdeel krijg je zeven afsluitende redeneringsvragen. Na het afronden van de vragenlijst heb je de optie om te kijken welk artikel echt nieuws en welk artikel nepnieuws is. Het geheel zal rond de 30 minuten duren.

#### *Controlegroep:*

Dit onderzoek zal bestaan uit vier onderdelen. Allereerst word je gevraagd enkele achtergrondvragen in te vullen waarmee benodigde demografische data worden verzameld voor dit onderzoek. Als tweede krijg je 28 koppen te zien van bestaande nieuwsartikelen. Geef bij elk artikel aan (a) of je het nieuwsartikel eerder hebt gezien en (b) of jij denkt dat het nieuwsartikel accuraat is. Als derde onderdeel krijg je zeven redeneringsvraagstukken. Als vierde en laatste onderdeel krijg je 11 tips aangeboden die je kan gebruiken om nepnieuws te herkennen. Na het afronden van de vragenlijst heb je de optie om te kijken welk artikel echt nieuws en welk artikel nepnieuws is. Het geheel zal rond de 30 minuten duren.

### Compensatie

Er wordt geen compensatie aangeboden voor deelname aan dit onderzoek.

### **Vrijwillige deelname**

Deelname aan dit onderzoek is volledig vrijwillig. Mocht je tijdens deelname besluiten te willen stoppen, dan ben je daar volledig vrij in zonder consequenties. Je gegevens worden dan niet opgeslagen.

### **Verwachte voor- en nadelen aan deelname**

Een verwacht voordeel voor deelname aan dit onderzoek is dat je beter leert nepnieuws te onderscheiden van echt nieuws. Hierdoor kan je beter de waarde van informatie inschatten en bijdragen aan een sterkere democratische samenleving. Er zit echter ook een verwacht nadeel aan deelname. Je zal als participant blootgesteld worden aan nepnieuws tijdens dit onderzoek. Het zou daarom kunnen dat je als participant ideeën overneemt die gebaseerd is op een foutieve informatie. Om dat te voorkomen raad ik je aan om je antwoorden van de test te controleren. Hier is uitgelegd welke nieuws echt en nep is met een onderbouwing.

### **Dataopslag**

Allereerst en allerbelangrijkst, **deelname aan dit onderzoek is volledig anoniem**. Jouw identiteit kan dus niet worden achterhaald op basis van de informatie die door jou gegeven wordt tijdens participatie aan dit onderzoek. Daarnaast worden er geen IP-adressen opgeslagen. De ruwe geanonimiseerde data worden via reglementen van Universiteit Utrecht opgeslagen in beveiligde mappen en zullen voor een periode van 10 jaar beschikbaar blijven voor mogelijke reproductie van het onderzoek of andere onderzoeksdoeleinden.

### **Contactgegevens**

Heb je nog vragen die niet beantwoord zijn door deze informatiebrief, neem dan vooral contact op met de onderzoeker. Ik ben te bereiken via het volgende mailadres: [j.l.zonneveld@students.uu.nl](mailto:j.l.zonneveld@students.uu.nl). Voor contact met mijn scriptiebegeleider kan je een mail sturen naar [e.m.janssen@uu.nl](mailto:e.m.janssen@uu.nl). Wil je een klacht indienen over dit onderzoek, neem dan contact op met [klachtenfunctionaris-fetcsocwet@uu.nl](mailto:klachtenfunctionaris-fetcsocwet@uu.nl). Als laatste kan je via <https://www.uu.nl/en/organisation/data-protection-officer> de contactgegevens vinden voor de Functionaris Gegevensbescherming van de Universiteit Utrecht.

Bedankt voor je deelname!

Met vriendelijke groet,

Justin Zonneveld

### Toestemmingsverklaring

Door deel te nemen aan dit onderzoek, ga ik akkoord met de volgende zaken:

- Ik heb de informatiebrief zorgvuldig gelezen en ik ben mij bewust van de rechten en plichten van deelname aan dit onderzoek
- Ik ben bereid gegevens te verstrekken zoals deze van mij gevraagd worden in deze enquête. De inhoud van de enquête is in lijn met wat er in de informatiebrief is geschreven.
- Ik ben bewust dat ik nepnieuwsartikelen te zien krijg waarvan sommige een democratisch-maatschappelijke inhoud bevatten. Ik ben daarom bereid aan het einde van de enquête mijn antwoorden te controleren.
- Ik ben 16 jaar of ouder

Ga je akkoord met deze voorwaarden?

Ja

Nee

### Demografische vragen

Om de betrouwbaarheid en validiteit van mijn onderzoek te waarborgen, wil ik graag eerst 3 standaard demografische vragen stellen:

1. Wat is je leeftijd?  
\_ jaar

**Let op! Deelname is bij jonger dan 16 niet toegestaan vanwege ethische redenen.**

2. Wat is je geslacht?

Man

Vrouw

Non-binair

Anders

Zeg ik liever niet

3. Wat is je huidige opleiding? Als je momenteel geen opleiding meer volgt, wat was je hoogst behaalde opleiding?

Mavo

Havo

Vwo

Mbo

Hbo

Bachelor – universiteit

Master – universiteit

Kandidaats/PhD

Anders

## **Digital Media Literacy Intervention**



## Tips om nepnieuws te herkennen

Beste deelnemer,

Nepnieuws onderscheiden van echt nieuws kan flink lastig zijn. Dit komt onder andere doordat nepnieuws echt nieuws kopieert in hoe het zichzelf presenteert (vormgeving, schrijfwijze etc.). Om jou beter voor te bereiden, geef ik je 11 tips die jij kan gebruiken om nepnieuws te herkennen. Lees ze zorgvuldig door, want je moet ze zo gaan toepassen.

-- Pg.1 --

### 1. Kijk sceptisch naar titels

Nepnieuwsberichten hebben vaak schreeuwende, pakkende titels in hoofdletters en uitroeptekens. Wanneer schokkende beweringen in titels ongeloofwaardig klinken, dan zijn ze dat waarschijnlijk ook.

### 2. Bekijk meerdere bronnen

Als er geen andere nieuwsbronnen te vinden zijn met hetzelfde verhaal, dan er kunnen wijzen dat het verhaal onjuist is. Als een verhaal wordt gerapporteerd door meerdere bronnen die jij vertrouwt, dan is het waarschijnlijker dat het waar is.

### 3. Beoordeel de bronnen

Zorg ervoor dat het verhaal geschreven is door een bron die je vertrouwt met een goede reputatie op het gebied van betrouwbaarheid en accuraatheid. Als het verhaal van een onbekende organisatie komt, lees dan de “About us/Over ons”-sectie om meer te weten te komen over de werkwijze van de organisatie.

## Controle vraag 1:

Wat is volgens wat je net gelezen hebt een indicatie dat een artikel waarschijnlijk meer waar is?

- a. Gemeld door meerdere vertrouwde bronnen
- b. Veel quotes van experts
- c. Gebruik van links en foto's
- d. Verschijnt op Google

-- Pg. 2 --

#### **4. Is het verhaal grappig bedoeld?**

Soms zijn nepnieuwsberichten lastig te onderscheiden van humor of satire. Controleer of de bron bekend staat als parodie (bijv. De Speld) en of de details en toon van het verhaal suggereren dat het grappig bedoeld is.

#### **5. Controleer het bewijs**

Controleer of de bronnen die de auteur gebruikt betrouwbaar zijn en kloppen. Een gebrek aan bewijs of vertrouwen op naamloze experts kan duiden op een nepnieuwsbericht.

#### **6. Bekijk de URL goed**

Een neppe of geïmiteerde URL kan een teken zijn van nepnieuws. Veel nepnieuws sites bootsen authentieke nieuwsbronnen na door kleine wijzigingen te maken aan de URL. Je kan naar de website gaan om URL te vergelijken met de gevestigde bronnen.

### **Controlevraag 2:**

Waar werd je tegen gewaarschuwd door een van de tips die je net las?

- a. Phishing oplichters
- b. Online bots
- c. Neppe of namaak URL's**
- d. Bewerkte foto's

-- Pg. 3 --

#### **7. Kijk uit voor ongebruikelijke opmaak**

Veel nepnieuws websites bevatten spelfouten of hebben een ongewone lay-out. Lees het bericht extra zorgvuldig als je degelijke signalen opmerkt.

#### **8. Neem de foto's in overweging**

Nepnieuws verhalen bevatten vaak gemanipuleerde foto's of video's. Soms kan de foto echt zijn, maar is de foto op een heel ander moment of in een andere omgeving genomen zijn. Je kan zelf de foto of video opzoeken om te achterhalen waar deze vandaan komt.

## 9. Inspecteer de data

Nepnieuwsberichten kunnen tijdlijnen bevatten die nergens op slaan of de datums van gebeurtenissen kloppen niet.

### Controlevraag 3:

Op basis van wat je net gelezen hebt, wat kan een indicatie zijn van een nepnieuws artikel?

- a. Spelfouten
- b. Wikipedia als bron
- c. Verzoek tot donaties
- d. Advertenties voor gezondheidsproducten

-- Pg. 4 --

## 10. Sommige verhalen zijn opzettelijk onjuist geschreven

Denk kritisch over verhalen die je leest en deel alleen nieuws waarvan je weet dat het betrouwbaar is.

## 11. Trek informatie die je van streek maakt in twijfel

Als je iets leest dat je boos of bang maakt, vraag je dan of het verhaal gedeeld is om je zo te laten voelen. Als je dat vermoedt, denk dan twee keer na voordat je het deelt.

### Controlevraag 4:

Wanneer kan je beter nieuws niet delen via bovenstaande tips?

- a. Als het mij boos maakt
- b. Als het over politiek gaat
- c. Als ik vermoed dat het opzettelijk geschreven is om emoties uit te lokken
- d. Als ik het niet eens ben met de inhoud

Met deze tips kan jij makkelijker de betrouwbaarheid van nieuws inschatten. **Let op.** Niet alle tips zijn direct van toepassing. Voor deze test hoef je geen informatie op te zoeken. Werk alleen met wat je te zien krijgt in de test.

## **Fake News Recognition Test**

### Content FNRT

The Fake News Recognition Test (FNRT) consists of 28 news items, 14 of which are real news and 14 of which are fake news (see Table 2 and 3). Real news is defined as ‘real’ if the story is backed up by multiple high profile news outlets in the Netherlands and the story is not scrutinized by fact checkers. In contrast, fake news is defined as fake if the story is deemed fake if the story is debunked by at least one factchecking agency or comes from a known satirist news outlet (e.g. De Speld and Nieuwspaal). In one instance, an item (FNA\_7) was deemed fake without the presence of a fact check. The claim, however, was to such an extent extravagant that if there was any factuality to it, it would likely result in significant societal attention. The story was not supported by other news outlets and only published on one medium, the ‘revolutionaironline.nl’. Both this medium and the source of the evidence on Twitter are notorious fake news spreaders.

The items are news items that are either created or have seen a resurgence in social media attention in the past two years. The news items reflect a variety of topics, including politics, governmental policy, Covid-19, climate change and immigration. An overview of the topics as they are represented in the FNRT can be found in Table 1.

*Table 1, Distribution of topics among real and fake news*

<b>Topic</b>	<b>True</b>	<b>False</b>
Covid-19	1	1
Government(al policy) – Covid-19 related	3	2
Government(al policy)	2	3
Politics - Extreme	2	
Politician - Right	1	
Politician - Left	1	1
Financial		1
Foreign news	1	2
Climate change	2	1
Else		1
<b>Total</b>	<b>14</b>	<b>14</b>

Table 2, Real news articles

Code	Headline	Source	Alternative sources
RNA_1	FBI pakt extreemrechtse Nederlander op die burgeroorlog wil starten	<a href="https://joop.bnnvara.nl/nieuws/fbi-pakt-extreemrechtse-nederlander-op-die-burgeroorlog-wil-starten">https://joop.bnnvara.nl/nieuws/fbi-pakt-extreemrechtse-nederlander-op-die-burgeroorlog-wil-starten</a>	<a href="https://www.telegraaf.nl/nieuws/657351086/fbi-pakt-zwaarbewapende-extreemrechtse-nederlander-op-in-vs">https://www.telegraaf.nl/nieuws/657351086/fbi-pakt-zwaarbewapende-extreemrechtse-nederlander-op-in-vs</a> <a href="https://www.rtlnieuws.nl/nieuws/buitenland/artikel/5217627/illegal-wapenbezit-nederlander-vs">https://www.rtlnieuws.nl/nieuws/buitenland/artikel/5217627/illegal-wapenbezit-nederlander-vs</a>
RNA_2	Weer BN'ers in opstand tegen coronamaatregelen: 'Ons moederhart slaat op tilt'	<a href="https://www.telegraaf.nl/entertainment/596596589/weer-bn-ers-in-opstand-tegen-coronamaatregelen-ons-moederhart-slaat-op-tilt">https://www.telegraaf.nl/entertainment/596596589/weer-bn-ers-in-opstand-tegen-coronamaatregelen-ons-moederhart-slaat-op-tilt</a>	<a href="https://www.destentor.nl/dossier-coronavirus/bekende-moeders-in-opstand-tegen-coronare-gels-volg-ze-niet-op-als-het-tegen-je-geweten-in-gaat~a02e1639/?referrer=https%3A%2F%2Fwww.google.com%2F">https://www.destentor.nl/dossier-coronavirus/bekende-moeders-in-opstand-tegen-coronare-gels-volg-ze-niet-op-als-het-tegen-je-geweten-in-gaat~a02e1639/?referrer=https%3A%2F%2Fwww.google.com%2F</a> <a href="https://www.shownieuws.nl/entertainment/bekende-moeders-samen-in-opstand-tegen-coronamaatregelen">https://www.shownieuws.nl/entertainment/bekende-moeders-samen-in-opstand-tegen-coronamaatregelen</a>
RNA_3	Baudet verwacht dat hij 'met open armen wordt ontvangen' bij formatie	<a href="https://nos.nl/artikel/2373147-baudet-verwacht-dat-hij-met-open-armen-wordt-ontvangen-bij-formatie.html">https://nos.nl/artikel/2373147-baudet-verwacht-dat-hij-met-open-armen-wordt-ontvangen-bij-formatie.html</a>	<a href="https://www.ad.nl/politiek/baudet-noemt-forum-voor-democratie-grootste-winnaar-ophef-om-hutjemutje-feestvieren-ada7cc52/">https://www.ad.nl/politiek/baudet-noemt-forum-voor-democratie-grootste-winnaar-ophef-om-hutjemutje-feestvieren-ada7cc52/</a> <a href="https://nieuws.nl/algemeen/20210318/baudet-wil-als-grootste-winnaar-initiatief-nemen-in-formatie/">https://nieuws.nl/algemeen/20210318/baudet-wil-als-grootste-winnaar-initiatief-nemen-in-formatie/</a> <a href="https://www.nu.nl/tweede-kamerverkiezingen-2021/6122695/baudet-zegt-dat-partijen-niet-meer-om-fvd-heen-kunnen-en-wil-meeregeren.html">https://www.nu.nl/tweede-kamerverkiezingen-2021/6122695/baudet-zegt-dat-partijen-niet-meer-om-fvd-heen-kunnen-en-wil-meeregeren.html</a>
RNA_4	Rutte geeft in gesprek met Jort Kelder toe: "We hebben te lang niet met coronacritici gepraat"	<a href="https://www.dvhn.nl/extra/Rutte-geeft-in-gesprek-met-Jort-Kelder-toe-We-hebben-te-lang-niet-met-coronacritici-gepraat-26516677.html">https://www.dvhn.nl/extra/Rutte-geeft-in-gesprek-met-Jort-Kelder-toe-We-hebben-te-lang-niet-met-coronacritici-gepraat-26516677.html</a>	<a href="https://www.telegraaf.nl/nieuws/1555080209/rutte-geeft-toe-we-hebben-te-lang-niet-met-coronacritici-gepraat">https://www.telegraaf.nl/nieuws/1555080209/rutte-geeft-toe-we-hebben-te-lang-niet-met-coronacritici-gepraat</a>
RNA_5	Steeds meer branden door zonnepanelen: Experts slaan alarm	<a href="https://www.rtlnieuws.nl/nieuws/artikel/4420686/zon-nepanelen-huizen-record-brand">https://www.rtlnieuws.nl/nieuws/artikel/4420686/zon-nepanelen-huizen-record-brand</a>	
RNA_6	'Woeste vader onthoofdt dochter (17) vanwege verboden relatie'	<a href="https://www.ad.nl/buitenland/woeste-vader-onthoofdt-dochter-17-vanwege-verboden-relatie-hij-was-rustig-en-huilde-niet-ab3160c7/">https://www.ad.nl/buitenland/woeste-vader-onthoofdt-dochter-17-vanwege-verboden-relatie-hij-was-rustig-en-huilde-niet-ab3160c7/</a>	<a href="https://edition.cnn.com/2021/03/05/india/father-beheads-daughter-india-intl-scli/index.html">https://edition.cnn.com/2021/03/05/india/father-beheads-daughter-india-intl-scli/index.html</a> <a href="https://www.aljazeera.com/news/2021/3/5/girls-beheading-in-india-spurs-calls-for-honour-killings-law">https://www.aljazeera.com/news/2021/3/5/girls-beheading-in-india-spurs-calls-for-honour-killings-law</a>

RNA_7	Amnesty International: Het politieoptreden bij het coronaprotest op het Malieveld was levensgevaarlijk	<a href="https://www.trouw.nl/binnenland/amnesty-het-politieoptreden-bij-het-coronaprotest-op-het-malieveld-was-levensgevaarlijk~b0ce4587/#:~:text=Volgens%20Amnesty%20hebben%20meerdere%20agenten, stelt%20de%20mensenrechtenorganisatie%20op%20Twitter.&amp;text=De%20politie%20maakte%20een%20einde, demonstranten%20op%20het%20veld%20waren.">https://www.trouw.nl/binnenland/amnesty-het-politieoptreden-bij-het-coronaprotest-op-het-malieveld-was-levensgevaarlijk~b0ce4587/#:~:text=Volgens%20Amnesty%20hebben%20meerdere%20agenten, stelt%20de%20mensenrechtenorganisatie%20op%20Twitter.&amp;text=De%20politie%20maakte%20een%20einde, demonstranten%20op%20het%20veld%20waren.</a>	<a href="https://www.telegraaf.nl/nieuws/1539415763/woeste-vader-onthoofdt-dochter-17-vanwege-verboden-relatie">https://www.telegraaf.nl/nieuws/1539415763/woeste-vader-onthoofdt-dochter-17-vanwege-verboden-relatie</a>
RNA_8	Verkracht? Wacht even met de aangifte, zegt de politie nog steeds	<a href="https://www.parool.nl/nederland/verkracht-wacht-even-met-aangifte-zegt-de-politie-nog-steeds~b97213c5/#:~:text=Verkracht%3F,Wacht%20even%20met%20aangifte%2C%20zegt%20de%20politie%20nog%20steeds, moment%20aangifte%20te%20kunnen%20doen.&amp;text=Slachtoffers%20krijgen%20eerst%20een%20informatief%20gesprek">https://www.parool.nl/nederland/verkracht-wacht-even-met-aangifte-zegt-de-politie-nog-steeds~b97213c5/#:~:text=Verkracht%3F,Wacht%20even%20met%20aangifte%2C%20zegt%20de%20politie%20nog%20steeds, moment%20aangifte%20te%20kunnen%20doen.&amp;text=Slachtoffers%20krijgen%20eerst%20een%20informatief%20gesprek</a>	<a href="https://nos.nl/artikel/2372773-amnesty-disproportioneel-politiegeweld-bij-coronaprotest-malieveld.html">https://nos.nl/artikel/2372773-amnesty-disproportioneel-politiegeweld-bij-coronaprotest-malieveld.html</a> <a href="https://www.hartvannederland.nl/nieuws/misdaad-112/amnesty-onderzoek-politiegeweld-malieveld">https://www.hartvannederland.nl/nieuws/misdaad-112/amnesty-onderzoek-politiegeweld-malieveld</a> <a href="https://www.nu.nl/binnenland/6122021/amnesty-trekt-gepastheid-politiegeweld-op-malieveld-in-twijfel.html">https://www.nu.nl/binnenland/6122021/amnesty-trekt-gepastheid-politiegeweld-op-malieveld-in-twijfel.html</a> <a href="https://twitter.com/amnestynl/status/1371442658799976448">https://twitter.com/amnestynl/status/1371442658799976448</a>
RNA_9	87 sterfgevallen gemeld na coronaprik, niets wijst nog op patroon	<a href="https://www.nu.nl/coronavirus/6119443/87-sterfgevallen-gemeld-na-coronaprik-niets-wijst-nog-op-patroon.html">https://www.nu.nl/coronavirus/6119443/87-sterfgevallen-gemeld-na-coronaprik-niets-wijst-nog-op-patroon.html</a>	<a href="https://www.nd.nl/nieuws/varia/1022736/lareb-87-sterfgevallen-gemeld-na-coronaprik">https://www.nd.nl/nieuws/varia/1022736/lareb-87-sterfgevallen-gemeld-na-coronaprik</a> <a href="https://www.gelderlander.nl/doesburg/tot-nu-toe-87-overlijdens-gemeld-na-vaccin-klachten-als-koorts-en-rillingen-bij-astrazeneca-heviger-a5b46105/">https://www.gelderlander.nl/doesburg/tot-nu-toe-87-overlijdens-gemeld-na-vaccin-klachten-als-koorts-en-rillingen-bij-astrazeneca-heviger-a5b46105/</a>
RNA_10	Intimiderende stickers op voordeuren van linkse Nederlanders geplakt: 'Niet normaal'	<a href="https://www.linda.nl/nieuws/binnenland/intimiderende-stickers-vizier-op-links-voordeuren/">https://www.linda.nl/nieuws/binnenland/intimiderende-stickers-vizier-op-links-voordeuren/</a>	<a href="https://nos.nl/artikel/2373565-stickers-vizier-op-links-op-voordeuren-geplakt-kamervragen-over-intimidatie.html">https://nos.nl/artikel/2373565-stickers-vizier-op-links-op-voordeuren-geplakt-kamervragen-over-intimidatie.html</a> <a href="https://www.rtlnieuws.nl/nieuws/nederland/artikel/5221345/vizier-links-stickers-universiteitenkoepel-vsnu-radicaal-rechts">https://www.rtlnieuws.nl/nieuws/nederland/artikel/5221345/vizier-links-stickers-universiteitenkoepel-vsnu-radicaal-rechts</a> <a href="https://www.trouw.nl/binnenland/wie-plakt-die-intimiderende-stickers-van-vizier-op-links~b765f5eb/">https://www.trouw.nl/binnenland/wie-plakt-die-intimiderende-stickers-van-vizier-op-links~b765f5eb/</a>
RNA_11	GroenLinks voert campagne met niet-bestaand progressief blok	<a href="https://www.volkskrant.nl/nieuws-achtergrond/groenlinks-voert-campagne-met-niet-bestaand-progressief-blok~b24abda/">https://www.volkskrant.nl/nieuws-achtergrond/groenlinks-voert-campagne-met-niet-bestaand-progressief-blok~b24abda/</a>	

RNA_12	Slechte dag voor Hugo de Jonge: na paspoortmisser nog meer pech	<a href="https://www.metronieuws.nl/in-het-nieuws/binnenland/2021/03/pechdag-hugo-de-jonge/">https://www.metronieuws.nl/in-het-nieuws/binnenland/2021/03/pechdag-hugo-de-jonge/</a>	<a href="https://www.telegraaf.nl/nieuws/2082562703/de-jonge-in-quarantaine-na-contact-met-positief-getest-persoon">https://www.telegraaf.nl/nieuws/2082562703/de-jonge-in-quarantaine-na-contact-met-positief-getest-persoon</a> <a href="https://www.rtlnieuws.nl/nieuws/nederland/artikel/5220345/hugo-de-jong-quarantaine-coronabesmettingen">https://www.rtlnieuws.nl/nieuws/nederland/artikel/5220345/hugo-de-jong-quarantaine-coronabesmettingen</a> <a href="https://www.ad.nl/binnenland/foutje-minister-hugo-de-jonge-komt-stemmen-met-ongeldig-paspoort-en-wordt-weer-naar-huis-gestuurd~a2273eb9/">https://www.ad.nl/binnenland/foutje-minister-hugo-de-jonge-komt-stemmen-met-ongeldig-paspoort-en-wordt-weer-naar-huis-gestuurd~a2273eb9/</a>
RNA_13	Nederlands klimaatbeleid scheelt maar 0,0003 graden opwarming	<a href="https://klimaatgek.nl/wordpress/2017/10/19/nederlands-klimaatbeleid-scheelt-maar-00003-graden-opwarming/">https://klimaatgek.nl/wordpress/2017/10/19/nederlands-klimaatbeleid-scheelt-maar-00003-graden-opwarming/</a>	<a href="https://nos.nl/artikel/2372991-minister-de-jonge-in-quarantaine-na-melding-corona-app.html">https://nos.nl/artikel/2372991-minister-de-jonge-in-quarantaine-na-melding-corona-app.html</a> <a href="https://www.volkskrant.nl/nieuws-achtergrond/nederlands-klimaatbeleid-scheelt-maar-0-0003-graden-opwarming-klopt-dit-wel~b7f17a69/">https://www.volkskrant.nl/nieuws-achtergrond/nederlands-klimaatbeleid-scheelt-maar-0-0003-graden-opwarming-klopt-dit-wel~b7f17a69/</a>
RNA_14	Helemaal klaar met overlast vluchtelingen Overloon: geen opvang meer van alleenstaande jongeren	<a href="https://www.ad.nl/binnenland/helemaal-klaar-met-overlast-vluchtelingen-overloon-geen-opvang-meer-van-alleenstaande-jongeren~a9dac602/">https://www.ad.nl/binnenland/helemaal-klaar-met-overlast-vluchtelingen-overloon-geen-opvang-meer-van-alleenstaande-jongeren~a9dac602/</a>	<a href="https://www.ad.nl/binnenland/helemaal-klaar-met-overlast-vluchtelingen-overloon-geen-opvang-meer-van-alleenstaande-jongeren~a9dac602/">https://www.ad.nl/binnenland/helemaal-klaar-met-overlast-vluchtelingen-overloon-geen-opvang-meer-van-alleenstaande-jongeren~a9dac602/</a>

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Table 3, Fake news articles

Code	Headline	Source	Fact checker
FNA_1	“Asielzoekers krijgen €1000 om op onze kosten tanden te laten bleken”	<a href="https://www.dagelijksestandaard.nl/2017/01/asielzoekers-krijgen-e-1000-om-op-onze-kosten-tanden-te-laten-bleken/">https://www.dagelijksestandaard.nl/2017/01/asielzoekers-krijgen-e-1000-om-op-onze-kosten-tanden-te-laten-bleken/</a>	<a href="https://sites.google.com/site/dehoaxwijzer/hoaxes/hoaxasielzoekerskrijgen1000omoponzekostentandentelatenbleken">https://sites.google.com/site/dehoaxwijzer/hoaxes/hoaxasielzoekerskrijgen1000omoponzekostentandentelatenbleken</a>
FNA_2	Minister de Jonge: “Als mensen niet luisteren, komen er heropvoedingskampen.”	<a href="https://ecency.com/nieuws/@dewaarheid/minister-de-jonge-als-mensen-niet-luisteren-komen-er-heropvoedingskampen">https://ecency.com/nieuws/@dewaarheid/minister-de-jonge-als-mensen-niet-luisteren-komen-er-heropvoedingskampen</a>	<a href="https://factchecknederland.afp.com/er-nergens-bewijs-dat-de-jonge-heropvoedingskampen-heeft-voorgesteld">https://factchecknederland.afp.com/er-nergens-bewijs-dat-de-jonge-heropvoedingskampen-heeft-voorgesteld</a>
FNA_3	Driekwart van de Nederlanders wil dat het kabinet dinsdag opstapt	The original was an altered image that was shared on Facebook. The image can be found at: <a href="https://perma.cc/ED96-J7FQ?type=image">https://perma.cc/ED96-J7FQ?type=image</a>	<a href="https://factchecknederland.afp.com/meerderheid-van-ondervraagden-panel-wilde-nieuwe-coronamaatregelen-niet-ontslag-regering">https://factchecknederland.afp.com/meerderheid-van-ondervraagden-panel-wilde-nieuwe-coronamaatregelen-niet-ontslag-regering</a>
FNA_4	Nederland kampt met ondersterfte, uitvaartbedrijven houden kabinet verantwoordelijk	Nieuwspaal is a satirical news outlet <a href="https://nieuwspaal.nl/nederland-kampt-met-ondersterfte-uitvaartbedrijven-houden-kabinet-verantwoordelijk/">https://nieuwspaal.nl/nederland-kampt-met-ondersterfte-uitvaartbedrijven-houden-kabinet-verantwoordelijk/</a>	
FNA_5	(NOS) SPECIALE BERICHTGEVING: De meest recente investering van Ali B verbaast experts en maakt grote banken doodsbang	Original article can not be found anymore. However, similar articles with other celebrities exist. <a href="https://medium.com/@morris.holland92/speciale-berichtgeving-de-meest-recente-investering-van-waylonwaylon-bijkerkbijkerk-verbaast-7d50fa93a425">https://medium.com/@morris.holland92/speciale-berichtgeving-de-meest-recente-investering-van-waylonwaylon-bijkerkbijkerk-verbaast-7d50fa93a425</a>	<a href="https://nos.nl/artikel/2299216-internetters-en-media-slachtoffer-van-frauduleuze-bitcoin-advertenties.html">https://nos.nl/artikel/2299216-internetters-en-media-slachtoffer-van-frauduleuze-bitcoin-advertenties.html</a> <a href="https://www.rtlboulevard.nl/entertainment/internet/artikel/4794751/ali-b-waarschuwt-voor-bitcoin-fraude">https://www.rtlboulevard.nl/entertainment/internet/artikel/4794751/ali-b-waarschuwt-voor-bitcoin-fraude</a> <a href="https://www.ad.nl/tech/google-blijft-hard-optreden-tegen-malafide-reclame-met-bn-ers-a78fcfe9/">https://www.ad.nl/tech/google-blijft-hard-optreden-tegen-malafide-reclame-met-bn-ers-a78fcfe9/</a>

FNA_6	Hoekstra: “Selectieve verontwaardiging over WW-plan, rest van ons beleid is ook asociaal”	De Speld is a satirical news outlet <a href="https://speld.nl/2021/03/05/hoekstra-selectieve-verontwaardiging-over-ww-plan-rest-van-ons-beleid-is-ook-asociaal/">https://speld.nl/2021/03/05/hoekstra-selectieve-verontwaardiging-over-ww-plan-rest-van-ons-beleid-is-ook-asociaal/</a>	
FNA_7	HORROR! COUP KAJSA ‘BILDERBERG’ OLLONGREN EXPOSED OM DE VERKIEZINGEN JOE BIDEN-STYLE TE STELEN VOOR SIGRID KAAG	<a href="https://revolutionaironline.com/horror-coup-kajsa-bilderberg-ollongren-exposed-om-de-verkiezingen-joe-biden-style-te-stelen-voor-sigrid-kaag/">https://revolutionaironline.com/horror-coup-kajsa-bilderberg-ollongren-exposed-om-de-verkiezingen-joe-biden-style-te-stelen-voor-sigrid-kaag/</a>	Fact check for this statement is not available. However, there is no alternative source available to back this claim and Revolutionair Online is a known fake news website.  <a href="https://www.denieuwereporter.nl/2016/11/complotdenkers-en-de-msm/">https://www.denieuwereporter.nl/2016/11/complotdenkers-en-de-msm/</a>  <a href="https://sites.google.com/site/dehoaxwijzer/valse-nieuwssites">https://sites.google.com/site/dehoaxwijzer/valse-nieuwssites</a>
FNA_8	NS: Asielzoekers mogen vanaf nu gratis met de trein reizen	(Deleted) <a href="http://kijkhet.nl/ns-asielzoekers-mogen-vanaf-nu-gratis-met-de-trein-reizen/">http://kijkhet.nl/ns-asielzoekers-mogen-vanaf-nu-gratis-met-de-trein-reizen/</a>	<a href="https://sites.google.com/site/dehoaxwijzer/hoaxes/hoaxasielzoekers-mogengratismetdetreinreizen">https://sites.google.com/site/dehoaxwijzer/hoaxes/hoaxasielzoekers-mogengratismetdetreinreizen</a>  <a href="https://www.hoaxmelding.nl/hoax/ns-asielzoekers-mogen-gratis-met-de-trein/">https://www.hoaxmelding.nl/hoax/ns-asielzoekers-mogen-gratis-met-de-trein/</a>
FNA_9	NASA geeft toe dat klimaatverandering veroorzaakt wordt door veranderingen in de rotatie van de Aarde om de zon en NIET door SUV’s en fossiele brandstoffen	<a href="https://web.archive.org/web/20190905165550/https://www.naturalnews.com/2019-08-30-nasa-admits-climate-change-not-caused-by-suvs-fossil-fuels.html">https://web.archive.org/web/20190905165550/https://www.naturalnews.com/2019-08-30-nasa-admits-climate-change-not-caused-by-suvs-fossil-fuels.html</a>	<a href="https://www.snopes.com/fact-check/nasa-climate-change-admission/">https://www.snopes.com/fact-check/nasa-climate-change-admission/</a>  <a href="https://www.thenews.com.pk/latest/551213-fact-check-nasa-claims-changes-in-earth-solar-orbit-causing-climate-change">https://www.thenews.com.pk/latest/551213-fact-check-nasa-claims-changes-in-earth-solar-orbit-causing-climate-change</a>  <a href="https://www.reuters.com/article/uk-factcheck-nasa-climate-change-idUSKBN2AI2KX">https://www.reuters.com/article/uk-factcheck-nasa-climate-change-idUSKBN2AI2KX</a>

FNA_10	EU-ambtenaren: pensioen vanaf 50 jaar en 9.000 euro per maand	<a href="https://www.nieuwsblad.be/cnt/dma17082005006">https://www.nieuwsblad.be/cnt/dma17082005006</a> <a href="https://www.binnenlandsbestuur.nl/ambtenaar-en-carriere/nieuws/carrierenieuws/eu-ambtenaren-pensioen-vanaf-50-jaar-en-9-000.389295.lynkx">https://www.binnenlandsbestuur.nl/ambtenaar-en-carriere/nieuws/carrierenieuws/eu-ambtenaren-pensioen-vanaf-50-jaar-en-9-000.389295.lynkx</a>	<a href="https://www.nu.nl/nucheckt/5677478/nucheckt-bericht-riant-pensioen-van-340-eu-ambtenaren-onjuist.html">https://www.nu.nl/nucheckt/5677478/nucheckt-bericht-riant-pensioen-van-340-eu-ambtenaren-onjuist.html</a> <a href="https://www.nrc.nl/nieuws/2014/05/07/eu-ambtenaren-van-50-krijgen-pensioen-van-9000-e-1375333-a283878">https://www.nrc.nl/nieuws/2014/05/07/eu-ambtenaren-van-50-krijgen-pensioen-van-9000-e-1375333-a283878</a> <a href="https://sites.google.com/site/dehoaxwijzer/hoaxes/hoax9000euromaandelijkspensioenvooreu-ambtenaren">https://sites.google.com/site/dehoaxwijzer/hoaxes/hoax9000euromaandelijkspensioenvooreu-ambtenaren</a> <a href="https://dpa-factchecking.com/netherlands/200831-99-377525/">https://dpa-factchecking.com/netherlands/200831-99-377525/</a>
FNA_11	Eefje (6) nu al aan de pil: “Liever dit dan zwanger”	(Deleted) <a href="https://todayviral.nl/eefje-6-nu-al-aan-de-pil-liever-dit-dan-zwanger/">https://todayviral.nl/eefje-6-nu-al-aan-de-pil-liever-dit-dan-zwanger/</a>	<a href="https://www.hoaxmelding.nl/hoax/eefje-6-nu-al-aan-de-pil/">https://www.hoaxmelding.nl/hoax/eefje-6-nu-al-aan-de-pil/</a>
FNA_12	CDA-Minster biecht gebruik harddrugs op	<a href="https://www.facebook.com/permalink.php?story_fbid=1909349072565082&amp;id=100004700237838">https://www.facebook.com/permalink.php?story_fbid=1909349072565082&amp;id=100004700237838</a>	<a href="https://dpa-factchecking.com/netherlands/210331-99-42058/">https://dpa-factchecking.com/netherlands/210331-99-42058/</a>
FNA_13	Meer Coronagevallen en -doden sinds vaccinatie. Meer vaccinaties, meer corona sterfgevallen?	<a href="https://www.frontnieuws.com/meer-coronagevallen-en-doden-sinds-vaccinatie/">https://www.frontnieuws.com/meer-coronagevallen-en-doden-sinds-vaccinatie/</a>	<a href="https://dpa-factchecking.com/netherlands/210329-99-14938/">https://dpa-factchecking.com/netherlands/210329-99-14938/</a>
FNA_14	Google verwijderd Palestina van maps	<a href="https://www.voorbeeld-allochtoon.nl/2016/08/09/google-verwijderd-palestina-van-maps/">https://www.voorbeeld-allochtoon.nl/2016/08/09/google-verwijderd-palestina-van-maps/</a>	<a href="https://www.vrt.be/vrtnws/nl/2020/07/17/check-nee-google-maps-heeft-palestina-niet-geschrapd-het-heef/">https://www.vrt.be/vrtnws/nl/2020/07/17/check-nee-google-maps-heeft-palestina-niet-geschrapd-het-heef/</a> <a href="https://dpa-factchecking.com/netherlands/200717-99-830905/">https://dpa-factchecking.com/netherlands/200717-99-830905/</a> <a href="https://www.volkskrant.nl/economie/google-beschuldigd-van-verwijderen-palestina-b23d2e38/">https://www.volkskrant.nl/economie/google-beschuldigd-van-verwijderen-palestina-b23d2e38/</a>

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### Start van de nepnieuwstest

Voordat je begint aan de test, wil ik je op de volgende punten wijzen:

- Alle nieuwsberichten hebben een soortgelijke vormgeving, zoals je in het figuur onder kan zien.
- Voor als je deze test thuis maakt → Zoek geen informatie op. Werk met wat de test je geeft.
- Bij elke vraag moet je aangeven
  1. Of je het nieuwsartikel al eens eerder hebt gezien (ja – nee)
  2. In hoeverre jij denkt dat het artikel **feitelijk accuraat** is op een schaal van 1 tot 4.

**Dit is een voorbeeld voor hoe alle nieuwsberichten er uit zien qua vormgeving.**



#### **Getest: Dit is de beste blender**

Wat is de beste blender? En welke heeft de beste prijs-kwaliteitsverhouding? NU.nl en de Consumentenbond geven antwoord.

NU.NL



## **FBI pakt extreemrechtse Nederlander op die burgeroorlog wil starten**

De Amerikaanse federale recherche FBI heeft een 26-jarige Nederlander opgepakt. De man, Jaap Willem L. had zich aangesloten bij de Boogaloo-beweging, een racistische groep die een burgeroorlog wil beginnen.

JOOP.BNNVARA.NL

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat



## **“Asielzoekers krijgen €1000 om op onze kosten tanden te laten bleken”**

Asielzoekers mogen op onze kosten hun tanden laten bleken, of op welke andere wijze dan ook €1000 te besteden aan tandzorg. “Wat een belachelijke situatie”, aldus VNL-lijsttrekker Jan...

DAGELIJKSESTANDAARD.NL

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat





### **Minister de Jonge: "Als mensen niet luisteren, komen er heropvoedingskampen."**

Volgens een woordvoerder van de regering zouden zulke heropvoedingskampen in de oude barakken van bijvoorbeeld Kamp Vugt geplaatst worden. Daar zijn tijdens de Tweede Wereldoorlog veel Joden vergast. "Hopelijk brengt uitgerekend die plek mensen op andere gedachten"

ECENCY.COM | @DEWAARHEID

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat



## Weer BN'ers in opstand tegen coronamaatregelen: 'Ons moederhart slaat op tilt'

Bekende moeders roepen andere moeders op om lak te hebben aan de coronamaatregelen voor kinderen.

TELEGRAAF.NL | REDACTIE

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat





## **Driekwart van de Nederlanders wil dat het kabinet dinsdag opstapt**

Ruim driekwart van de Nederlanders (76%) vindt het een goed idee als het kabinet aanstaande dinsdag al **opstapt**. Dat blijkt uit onderzoek onder ruim 2500 deelnemers van het *Hart van Nederland*-panel.

HARTVANEDERLAND.NL

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat



## Nederland kampt met ondersterfte, uitvaartbedrijven houden kabinet verantwoordelijk

Steeds meer bedrijven voelen de effecten van de coronamaatregelen. Het CBS kwam vandaag met dramatische cijfers over de sterfte in ons land. Uitvaartbedrijven zijn woedend.

NIEUWSPAAL.NL | PETER VAN RUYMBEEK

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat



## Baudet verwacht dat hij 'met open armen wordt ontvangen' bij formatie

Thierry Baudet van Forum voor Democratie verwacht dat hij "met open armen wordt ontvangen" bij de formatie van een nieuw kabinet. "Wij zijn met zes zetels winst de grote winnaar. Het is gebruikelijk dat de grootste winnaar het initiatief neemt bij de onderhandelingen. Dat wordt spannend", zei hij bij aankomst in de Tweede Kamer.

NOS.NL

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat



## **Rutte geeft in gesprek met Jort Kelder toe: "We hebben te lang niet met coronacritici gepraat"**

Het gesprek met groepen die het coronavirus niet ontkennen, maar wel kritisch zijn over de aanpak van het kabinet heeft in het voorjaar te lang niet plaatsgevonden. Dat erkent demissionair premier Mark Rutte in een interview met Jort Kelder op Radio 1

DAGBLADVANHETNOORDEN.NL

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat



**(NOS) SPECIALE BERICHTGEVING: De meest recente investering van Ali B verbaast experts en maakt grote banken doodsbang**

Nederlanders verdienen al miljoenen euro's vanuit huis door gebruik te maken van deze maas in de wet om rijk te worden. Maar is het legaal?

MEDIUM.NL | INGRID VAN DEN BAAR

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat





### **'Woeste vader onthoofd dochter (17) vanwege verboden relatie'**

In Noord-India is woensdag een man aangehouden op verdenking van het onthoofden van zijn eigen dochter. Dat deed hij nadat hij haar in bed zou hebben aangetroffen met een nieuwe vriend die hij niet mocht. De gruwelijke moord is in het land als een bom ingeslagen en wakkert het debat over eerwraak opnieuw aan. "Er moet een aparte wet komen voor het omgaan met eerwraak", stelt een van de grootste vrouwenrechtenorganisaties in India tegen lokale media.

AD.NL

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat



### **Hoekstra: "Selectieve verontwaardiging over WW-plan, rest van ons beleid is ook asociaal"**

Het plan van Wopke Hoekstra om de WW tot één jaar te verkorten heeft tot heel wat woede geleid. Velen politici en kiezers noemen het voorstel van de CDA-lijsttrekker 'asociaal'. Selectieve verontwaardiging, zo vindt Hoekstra. "We hebben de afgelopen tijd zoveel asociale dingen gedaan, maar daar hoor je niemand over."

SPELD.NL | RUDOLF JULIUS & JOS MAALDERINK

Heb je hier al eerder van gehoord/gelezen?	0	Ja	0	Nee		
Hoe accuraat denk je dat dit artikel is?	Helemaal niet accuraat	1	2	3	4	Zeer accuraat



## Amnesty International: Het politieoptreden bij het coronaprotest op het Malieveld was levensgevaarlijk

Burgemeester Jan van Zanen van Den Haag en het OM moeten onderzoek doen naar het optreden van de politie bij de coronademonstratie op het Malieveld zondag. Dat vindt Amnesty International. 'De beelden wijzen op disproportioneel geweld.'

TROUW.NL | MAARTEN VAN DE WIER

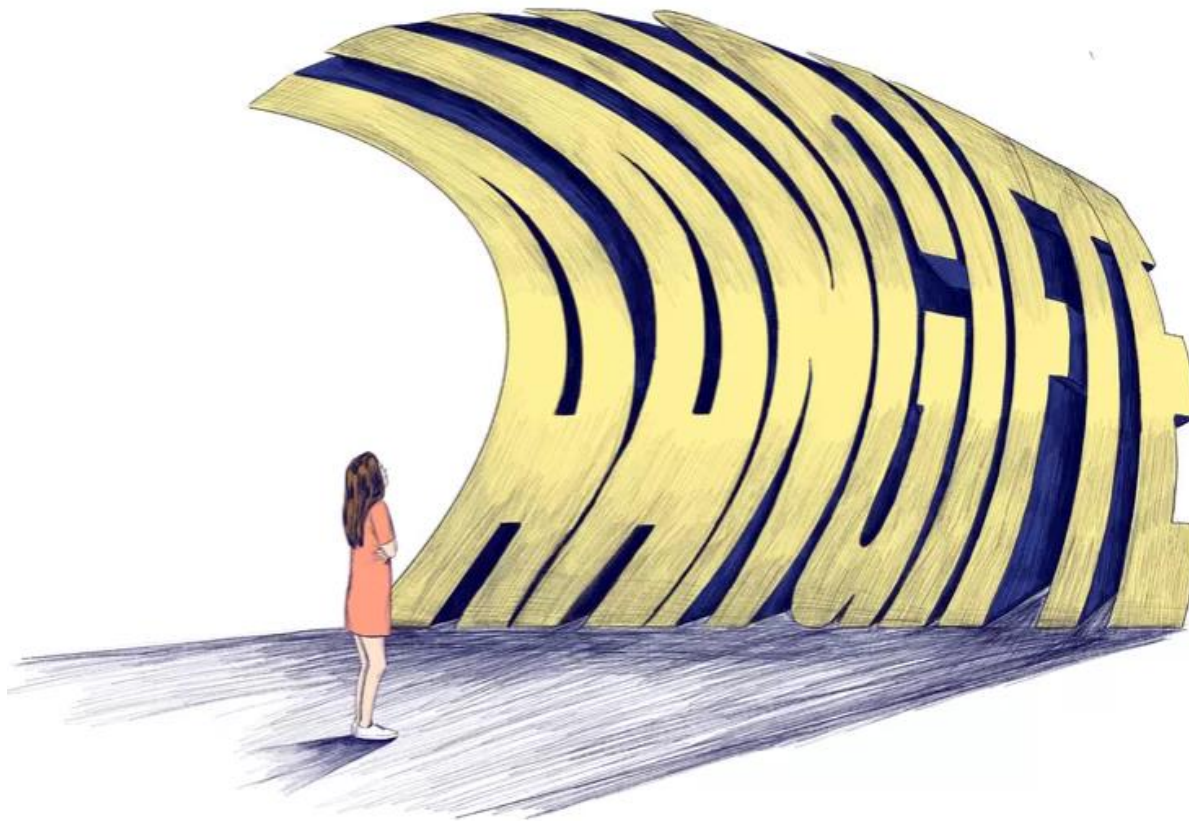
Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat





## Verkracht? Wacht even met de aangifte, zegt de politie nog steeds

Nederland is het enige land waar slachtoffers van seksueel geweld bij de politie eerst door een 'informatief gesprek' moeten, om op een later moment aangifte te kunnen doen. 'Slachtoffers gaan twijfelen.'

PAROOL.NL | DAVID HIELKEMA

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

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Helemaal niet accuraat 1 2 3 4 Zeer accuraat



## 87 sterfgevallen gemeld na coronaprik, niets wijst nog op patroon

Bijwerkingencentrum Lareb heeft tot nu toe 87 meldingen van overlijden na inenting met coronavaccins binnengekregen. Dat zijn er 22 meer vergeleken met een week geleden. Het centrum zegt geen patroon van klachten te zien die wijzen op ernstige bijwerkingen waaraan gevaccineerden kunnen zijn overleden

NU.NL

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Helemaal niet accuraat 1 2 3 4 Zeer accuraat



**HORROR! COUP KAJSA 'BILDERBERG' OLLONGREN  
EXPOSED OM DE VERKIEZINGEN JOE BIDEN-STYLE TE  
STELLEN VOOR SIGRID KAAG**

Enkele dagen geleden zeiden we het al: de SMARTMATIC-machines zijn al zo afgesteld dat Sigrid Kaag onze nieuwe HORROR-PM wordt.

REVOLUTIONAIRONLINE.NL

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat



## Intimiderende stickers op voordeuren van linkse Nederlanders geplakt: 'Niet normaal'

De stickers van de zogeheten groep 'Vizier op Links' duiken steeds vaker op. Historicus Nadia Bouras trof er zondagochtend ook een aan op haar deur. 'Ik kom net thuis en vind dit op mijn deurpost', schrijft ze onder een foto van de sticker op Twitter. 'Dit is niet normaal'. Haar tweet is inmiddels al duizenden keren geliket en geretweet.

LINDA.NL | MARLOES VAN WIJNEN

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat





## GroenLinks voert campagne met niet-bestaand progressief blok

Het is waarschijnlijk niet eerder vertoont: GroenLinks dat campagne voert voor andere partijen. Op een verkiezingsposter van GroenLinks staan ook de namen van de lijsttrekkers van PvdA, SP en D66. Dat is des te opmerkelijker, omdat die partijen helemaal geen alliantie met GroenLinks willen.

VOLKSKRANT.NL | FRANK HENDRICKX

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat



## NS: Asielzoekers mogen vanaf nu gratis met de trein reizen

BREAKING NEWS! De meeste vluchtelingen die pas uit Syrië naar Nederland zijn gekomen, mogen van de NS gratis reizen met de treinen en bussen. Dat zegt NS-woordvoerder Edwin van Scherrenburg. Hoe dit precies in zijn gang zal gaan, wordt later bekend gemaakt aan het NOS Journaal. LATER MEER

KIJKHET.NL

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat



## Slechte dag voor Hugo de Jonge: na paspoortmisser nog meer pech

Je hebt van die dagen dat je het liefste de hele dag onder je dekbed zou willen verdwijnen. Zo'n dag is het waarschijnlijk voor Hugo de Jonge. Vanmorgen moest Hugo de Jonge naar huis, want hij had een verouderd paspoort meegenomen toen hij wilde stemmen in Rotterdam. Later op de dag moest hij weer naar huis, in quarantaine, omdat hij mogelijk in contact is geweest met iemand met corona.

METRONIEUWS.NL

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat



## Steeds meer branden door zonnepanelen: Experts slaan alarm

Brand- en elektrotechniekexperts maken zich grote zorgen over de sterke toename van het aantal branden met zonnepanelen. Ze slaan alarm over de slechte kwaliteit van de installatie van de zonnepanelen.

RTLNIEUWS.NL

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat





## Nederlands klimaatbeleid scheelt maar 0,0003 graden opwarming

Dat werd vorige week in de Volkskrant opgetekend uit de mond van wetenschapsjournalist Marcel Crok. Aanleiding was het voornemen van het nieuwe kabinet om in 2030 de uitstoot van CO<sub>2</sub> in Nederland verminderd te hebben met 49% ten opzichte van 1990.

KLIMAATGEK.NL

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0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat



## **NASA geeft toe dat klimaatverandering veroorzaakt wordt door veranderingen in de rotatie van de Aarde om de zon en NIET door SUV's en fossiele brandstoffen**

De National Aeronautics & Space Administration (NASA) weten al langer dan 60 jaar dat de veranderingen in weerpatronen van de Aarde veroorzaakt compleet *natuurlijk* en *normaal* zijn. Maar de ruimteorganisatie, om wat voor reden dan ook, heeft ervoor gekozen de door mensen veroorzaakte klimaatopwarming-hoax te laten bestaan en verspreiden, dit ten nadele van de menselijke vrijheid.

NATURALWORLD.COM

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat



## **EU-ambtenaren: pensioen vanaf 50 jaar en 9.000 euro per maand**

Dit jaar gaan er 340 Europese topambtenaren met vervroegd pensioen. Dat gebeurt met wel een hele aantrekkelijke regeling. Opstappen kan vanaf 50 jaar en daarbij krijgen ze een uitkering mee die kan oplopen tot 9.000 euro per maand.

NIEUWSBLAD.BE

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat



### **Eefje (6) nu al aan de pil: “Liever dit dan zwanger”**

Meisjes beginnen op steeds jongere leeftijd aan de anticonceptiepil. Eefje Boog is pas 6 jaar, maar slikt al elke morgen de pil. “Liever dit, dan dat ze nu al zwanger raakt”, zegt haar moeder Rianne. Meisjes zijn op steeds jongere leeftijd vruchtbaar. Daardoor is er een enorme stijging in het aantal tienerzwangerschappen. Enkele jaren geleden kreeg een meisje uit Groningen op 12-jarige leeftijd haar eerste kind. De jongste moeder ooit was Lina Medina. Zij was 5, toen ze beviel van haar zoon.

TODAYVIRAL.NL

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat





### **Helemaal klaar met overlast vluchtelingen Overloon: geen opvang meer van alleenstaande jongeren**

In het asielzoekerscentrum in Overloon mogen 'per direct' geen jonge, alleenstaande vluchtelingen meer worden opgevangen. Een brief met die boodschap krijgt het Centraal Orgaan opvang asielzoekers (COA) volgende week van de gemeente Boxmeer. Aanleiding is de aanhoudende overlast waarvoor de vluchtelingen in het dorp zorgen.

AD.NL

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat



### **CDA-Minster biecht gebruik harddrugs op**

Vice-premier en minister Hugo de Jong (Volksgezondheid, Welzijn en Sport) heeft geregeld een snuif cocaine genomen. Dat bekent de minister, die eerder een landelijk manifest presenteerde voor het legaal verhandelen importeren en gebruiken van cocaine.

Morgen in interview met het AD

Rotterdams Dagblad

AD.NL

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1

2

3

4

Zeer accuraat



### **Meer Coronagevallen en -doden sinds vaccinatie. Meer vaccinaties, meer corona sterfgevallen?**

In bijna alle landen waar al massaal is gevaccineerd, is het aantal gemelde "gevallen" en sterfgevallen evenredig met het aantal vaccinaties gestegen. Dit lijkt nu ook in Oostenrijk te gebeuren, constateert Dr. Peter F. Mayer. De regering waarschuwt tenminste voor stijgende "aantal gevallen" en verscherpt of verlegt opnieuw maatregelen zoals de quarantaine bij binnenkomst in Oostenrijk.

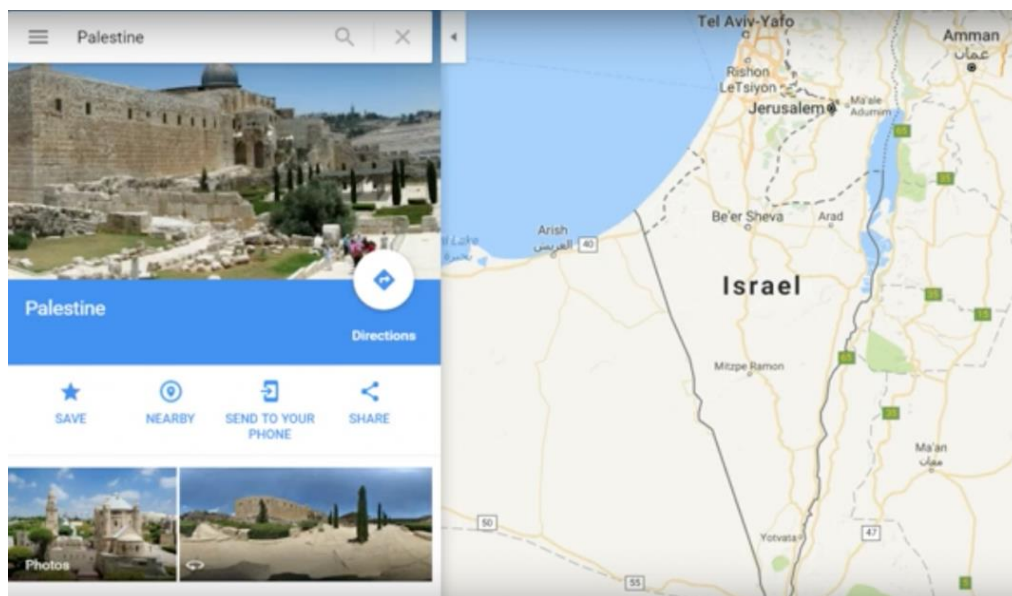
FRONTNIEUWS.NL

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat



### Google verwijderd Palestina van maps

Google krijgt boze reacties over zich heen van over de hele wereld. Dat is niet zonder reden. Google heeft namelijk Palestina volledig verwijderd van Google-maps.

VOORBEELD-ALLOCHTOON.NL

Heb je hier al eerder van gehoord/gelezen?

0 Ja 0 Nee

Hoe accuraat denk je dat dit artikel is?

Helemaal niet accuraat 1 2 3 4 Zeer accuraat



## **Cognitive Reflection Test**

**CRT-items:****Vraag 1 – CRT\_1:**

Een knuppel en een bal kosten samen €1.10. De honkbalknuppel kost €1,- meer dan de bal. Hoeveel kost de bal?

\_ cent

**Vraag 2 – CRT\_2:**

Als 5 broodmachines er 5 minuten over doen om 5 broden te snijden, hoelang zou het dan voor 100 broodmachines duren om 100 broden te snijden?

\_minuten

**Vraag 3 – CRT\_3:**

In een meer groeien waterlelies. De waterlelies verdubbelen zich elke dag. Als het 48 dagen duurt om het hele meer te bedekken, hoelang duurt het dan om het halve meer te bedekken?

\_ dagen

**Vraag 4 – CRT\_4:**

Je doet mee aan een hardloopwedstrijd. Als je de persoon op de tweede plek inhaalt, op welke plek sta je dan?

\_e plek

**Vraag 5 – CRT\_5:**

Een boer had 15 schapen. Op 8 na gingen ze allemaal dood. Hoeveel zijn er nog over?

\_ schapen

**Vraag 6 – CRT\_6:**

Lisa's vader heeft drie dochters. The eerste twee heten April en Mei. Hoe heet de derde dochter?

**Vraag 7 – CRT\_7**

Hoeveel kubieke meter aarde zit er in een gat van 1 meter diep x 1 meter breed x 1 meter lang?

\_m<sup>3</sup>

## *Debriefing*

### **Einde Onderzoek**

Hartstikke bedankt voor je deelname aan dit onderzoek! Ik hoop dat je het interessant en leuk vond om te doen.

Hieronder kan je de resultaten van de test zien:

Je hebt \_ van de 28 berichten goed ingeschat.

Je hebt \_ van de 14 nepnieuwsberichten herkend als nepnieuws

Je hebt \_ van de 14 juiste nieuwsberichten herkend als echt nieuws

Alle nieuwsberichten die je tijdens de test zag, zijn bestaande artikelen die op het internet te vinden zijn. Daarom moedig ik je aan de antwoorden van de test te bekijken en te zien wat echt en wat nepnieuws is. De juiste antwoorden zijn te vinden via deze [link](#).

Mocht je op de hoogte willen blijven van dit onderzoek, laat dan hieronder je mailadres achter. Na het afronden van mijn scriptie (verwacht half juni) zal ik deze met je delen.

**Appendix B, Pre-analyses demographic variables and assumptions checking**

**A Lesson in Fake News: Effects of a Digital Media Literacy Intervention on Dutch High School  
Students' Ability to Detect Fake News**

Preliminary analysis and Assumption checking

Justin Zonneveld

Master Thesis

Thesis Supervisor: Eva Janssen

### Preliminary analyses

A linear regression analysis was performed with the three demographic variables (age, gender and educational level) as predictor for potential inclusion as controlling variables. While age and gender are not significantly related to the FNRT- ( $R^2 = .104$ , adjusted  $R^2 = .071$ ,  $F(3, 82) = 3.162$ ,  $p_{edu} = .004$ ,  $p_{age} = .626$ ,  $p_{gender} = .458$ ), FNA ( $R^2 = .081$ , adjusted  $R^2 = .048$ ,  $F(3, 82) = 2.422$ ,  $p_{edu} = .021$ ,  $p_{age} = .774$ ,  $p_{gender} = .237$ ) and RNA ( $R^2 = .033$ , adjusted  $R^2 = -0.002$ ,  $F(3, 82) = .940$ ,  $p_{edu} = .101$ ,  $p_{age} = .723$ ,  $p_{gender} = .982$ ), educational level is a significant predictor for FNRT- and FNA-scores. This finding is interpreted that students in the research population at vwo level are significantly better in finding fake news than havo students, but not real news. As shown in the unstandardized (B) in Table 1, differences in educational level can amount to an 11,5% higher score on Fake news articles and an 8.8% higher score overall. Considering these results, it was decided to include educational level as control variable in the hypothesis analyses, as shown in the Methods.

Table 1, Age, gender and educational level on FNRT-, FNA- and RNA-scores

	<b>B</b>	<b>SE</b>	<b><math>\beta</math></b>	<b><i>p</i></b>
<b>FNRT</b>				
(Constant)	86.039	30.336		.008
Age	-1.543	1.811	-.088	.414
Gender	-.984	2.050	-.051	.633
Education	7.334	2.844	.276	.012*
<b>FNA</b>				
(Constant)	68.800	36.529		.063
Age	.075	2.185	.004	.973
Gender	-2.380	2.381	-.106	.321
Education	9.101	3.303	.293	.007**
<b>RNA</b>				
(Constant)	89.131	54.821		.108
Age	-2.533	3.288	-.084	.443
Gender	-.150	3.588	.005	.967
Education	7.898	4.884	.177	.110

\* $p < .05$  \*\* $p < .01$

### Assumptions checking

Two sources were used to gather the assumptions that needed to be checked for regression analysis in general (Field, 2017; Osborne & Waters, 2002) and moderation analysis using dichotomous variables (Laerd Statistics, n.d.). This culminated in eight assumptions that needed to be checked (see Table 2).

*Table 2, Assumptions checked in this research*

Nr.	Method	Laerd Statistics	Osborne & Waters	Field
1	Theoretical	Dependent variable should be measured on a continuous scale		Variable types
2	Theoretical	One independent variable is continuous and one moderator variable is dichotomous		Variable types
3	Design & Durbin Watson	You should have independence of observations (i.e., independence of variables)		Independent errors
4	Shapiro-Wilk & P-P plots		Variables are normally distributed	Normal distribution
5		There should be no significant outliers, high leverage point or highly influential points		Bias in linear models: Outliers & Influential cases
6		There needs to be a linear relationship between the dependent and independent variable <b>for each group</b>	Assumption of a linear relationship between the independent and dependent variable(s)	Additivity and linearity
7		Your data needs to show homoscedasticity	Assumption of homoscedasticity	Homoscedasticity
8	VIF-values	Your data must not show multicollinearity		No perfect multicollinearity

### **Assumption 1 – Dependent variable must be continuous**

In this research five dependent variables are used, all of which are continuous:

1. FNRT-score (0-28) recalculated into % (0-100) → ratio scale
2. Fake News score (0-14) recalculated into % (0-100) → ratio scale
3. Real News score (0-14) recalculated into % (0-100) → ratio scale
4. Mean scale Fake News (1-4) → interval scale
5. Mean scale Real News (1-4) → interval scale

**Assumption 1 is passed**

### **Assumption 2 – Independent continuous and moderator dichotomous variable**

This research only uses a single moderator regression analysis to test H3. In this analysis, further discussed below, three variables were used: one of the five dependent variables named in assumption 1, the DMLI-variable and CRT-scores.

1. DMLI-variable (control/experimental) recoded into 0 (control) and (1) experimental → nominal/dichotomous
2. CRT-scores (0-7) recalculated into % (0-100) → ratio scale/continuous

So, in this analysis a continuous variable (CRT-scores) can be used as an independent variable and a dichotomous variable (DMLI) as the moderator variable.

**Assumption 2 is passed**

### **Assumption 3 - Independence of observations**

Laerd Statistics (n.d.) states that independence of observations can be checked using the Durbin-Watson test. Glen (2016) defines the Durbin-Watson test as a method to check for autocorrelation. She mentions a rule of thumb stating that values from the test between 1.5 and 2.5 are



deemed relatively normal. In Field (2017) a more conservative rule of thumb is mentioned with values below 1 and above 3 as problematic. The Durbin-Watson scores are 1.466 (FNRT), 1.904 (FNA) and 1.534 (RNA). With only FNRT-variable falling just short of  $>1.5$ , but nowhere near problematic values, independence of variables can be assumed.

### Assumption 3 is passed

#### Assumption 4 – Normal Distribution

#### Assumption 5 – Outliers and Influential Cases

#### Round 1

##### Normal Distribution

The first round of normal distribution analysis holds  $N = 87$ . Using skewness, kurtosis, Shapiro-Wilk test and several visuals, the normal distribution was analyzed. Shapiro-Wilk is less relevant due to the smaller sample size (Field, 2017). Results of the first wave show that FNRT and RNA are normally distributed and FNA not normally distributed (see Table 3).

*Table 3, Normal distribution results Wave*

	FNRT	FNA	RNA
<b>Skewness</b>			
Statistic	-.033	-1.538	-.353
Std. Error	.260	.260	.258
z-score	.127	5.915*	1.317
<b>Kurtosis</b>			
Statistic	-.695	3.801	-.519
Std. Error	.514	.514	.511
z-score	1.352	7.395*	1.012
Shapiro-Wilk	.204	.000**	.008*

\*significant skew/kurtosis ( $> 1.96$ )

\*\*Significant non-normally distributed

### **Outliers & Influential cases**

Using Cooks distance, normal Q-Q plot and box plot several outliers were detected: Case 49 for FNRT, Case 1 and 79 for FNA and Case 56 for RNA. Case 1 was the most severe outlier (see Figure 1) and also an influential case when looked at changes in the regression equations and significance level. With Case 1 they are as follows:

$$Y_{FNRT} = 66.125 + 4.559(DMLI) + .048(CRT) \text{ with } p = .053$$

$$Y_{FNA} = 77.865 + 2.396(DMLI) + .031(CRT) \text{ with } p = .472$$

$$Y_{RNA} = 54.384 + 6.271(DMLI) + .064(CRT) \text{ with } p = .082$$

Without Case 1, there are some major changes. The effect of the DLMI on the FNRT becomes significant and the coefficient strength of the DMLI on FNA almost doubles in strength. The effect of the DMLI on FNA remains insignificant, but improves considerably.

$$Y = 65.758 + 5.165(DMLI) + .053(CRT) \text{ with } p = .026$$

$$Y = 76.869 + 4.047(DMLI) + .045(CRT) \text{ with } p = .169$$

$$Y = 54.648 + 6.284(DMLI) + .061(CRT) \text{ with } p = .105$$

Diagnostics of outliers and influential points do not warrant their removal without understanding as to why these participants had deviant scores (Field, 2017). An explanation can be found in the duration time. The participant of Case 1 finished the experiment in under six minutes, whereas the mean duration time was 19 minutes. It is therefore probable that this participant did not take the experiment seriously. Removal of Case 1 from further is therefore justified.

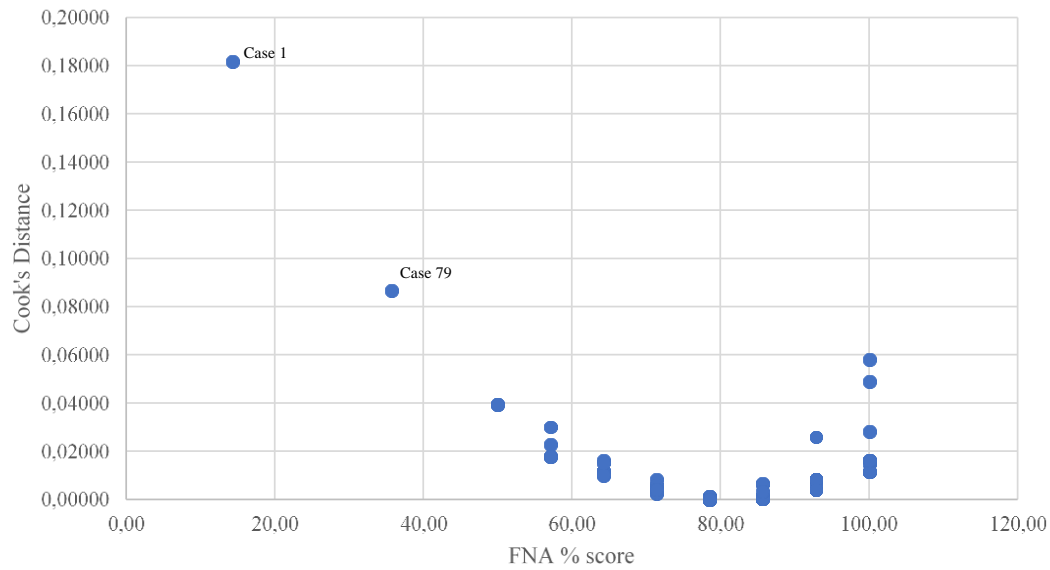


Figure 1, Scatter plot of Cook's Distance by FNA % score

## Round 2

### Normal Distribution

Results of the second round with  $N = 86$  shows that FNRT and RNA are normally distributed. FNA-scale remains skewed after the removal of Case 1, but no longer has kurtosis (see Table 4). Even with Case 79 removed, FNA remains skewed.

Table 4, Normal distribution results Round 2

	FNRT	FNA	C. 79 removed	RNA
Skewness				
Statistic	-.002	-.946	-.700	-.339
Std. Error	.261	.261	.263	.260
z-score	.007	3.624*	2.633*	1.303
Kurtosis				
Statistic	-.710	.823	-.101	-.505
Std. Error	.517	.517	.520	.514
z-score	.0013	1.59	.194	.982
Shapiro-Wilk	.213	.000**	.000**	.011**

\*significant skew/kurtosis ( $> 1.96$ )

\*\*Significant non-normally distributed

### **Outliers & Influential cases**

49, 79 and 56 remain outliers for respectively FNRT, FNA and RNA. Scoring all  $> .1$  for Cook's distance, further inspection is warranted. With Case 49, the regression equation for FNRT is  $Y = 65.758 + 5.165(\text{DMLI}) + .053(\text{CRT})$  with  $p = .026$  for the DMLI. Without Case 49 the regression is  $Y = 64.185 + 4.588(\text{DMLI}) + .075(\text{CRT})$  with  $p = .044$  for the DMLI. With Case 79 included the regression for FNA is  $Y = 76.869 + 4.047(\text{DMLI}) + .045(\text{CRT})$  with  $p = .169$  for the DMLI, without  $Y = 75.462 + 3.531(\text{DMLI}) + 0.065(\text{CRT})$  with  $p = .230$ . Lastly, with Case 56, the regression is  $Y = 54.648 + 6.284(\text{DMLI}) + .061(\text{CRT})$  with  $p = .105$  for the DMLI. Without it the regression is  $Y = 58.629 + 5.358(\text{DMLI}) + .018(\text{CRT})$  with  $p = .156$ . Due to a lack of major changes in the constant, coefficients or significance levels, all three cases were not deemed influential cases. Additionally, no logical explanation could be given as to why they were outliers. Case 49 was with 908 seconds or 15 minutes the farthest of the three from the mean of 1155 seconds or 19 minutes with the others deviating less than a minute from the mean. All were from vwo level so educational levels is also not an explanation. As such, it was decided that further removal of outliers is not justified.

### **Conclusion**

FNRT and RNA scales are normally distributed, but FNA is skewed to lower scores. Even with four outliers removed the data remained skewed. Data shows that most participants scored rather high on Fake News Articles with a mean score of 81%. So, any participant who takes the test less seriously or is relatively worse in detecting fake news qualifies quickly as an outlier.

**Assumption 3 is passed for FNRT and RNA - Assumption 3 is not passed for FNA**

### **Assumption 6 – Linear relationship**

DMLI and educational level as dummy variables have a linear relationship with the dependent variable by default. CRT-scores on the dependent variables were checked using a scatter plot and there was a clear linear relationship.

**Assumption 6 is passed**

### Assumption 7 – Homoscedasticity

Two methods were used to look for homoscedasticity. The first method was the use of scatter plots with Regression Standardized Residuals on the Y-axis and Regression Standardized Predicted Value on the X-axis. There were no visual indications of heteroscedasticity. Additionally, the Breusch-Pagan test was performed in SPSS. Hypotheses for this test are as follows with a significance level of .05:

**H0:** *The data shows homoscedasticity with residuals distributed with equal variances.*

**H1:** *The data shows heteroscedasticity with residuals not distributed with equal variances.*

The results of the Breusch-Pagan test ( $p_{FNRT} = .487$ ,  $p_{FNA} = .193$ ,  $p_{RNA} = .506$ ) are all non-significant, meaning that homoscedasticity can be assumed for all independent variables.

### Assumption 7 is passed

### Assumption 8 – Multicollinearity

Initial multiple linear regression analysis with an interaction variable for DMLI and CRT-scores indicated a risk of multicollinearity for the DMLI- and the interaction variable (see Table 6). The VIF-value for the interaction variable is above the critical value of 10 (Field, 2017) and the DMLI-variable just below it. Allison (2012) recommends centring main predictor variables, which the DMLI, CRT-score and interaction variable are, with a VIF-value above 2.5. Therefore, the decision was taken to centre DMLI- and CRT-variables and create a new centred interaction variable. VIF-values for the centred variables were all well below 2.5 (see Table 5), so the risk of multicollinearity ceased.

*Table 5, VIF-values for uncentred and centred variables*

Variables	VIF-values	
	Uncentred	Centred
DMLI	9.051	1.082
CRT	1.846	1.027
DMLI*CRT	10.039	1.094
Educational level	1.042	1.042

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