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Testing Children and Adolescents' Ability to Identify Fake News: A Combined Design of Quasi-Experiment and Group Discussions

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Abstract: Nowadays, people increasingly choose to turn to the Internet and especially to social media for news and other types of content, while often not questioning the trustworthiness of the information. An acute form of this problem is that children and adolescents tend to include the use of new technologies in all the aspects of their daily life, yet most of them are unable to distinguish between fake news and trustful information in an online environment. This study is based on a Dutch empirical study and was conducted in Romania to examine whether schoolchildren and adolescents were able to identify a hoax website as fake, using a self-administrative questionnaire and open group discussions about the given online source. Similar to other studies based on the same research design, this research aims to explore the vulnerability of students to fake news and the way they experience an experimental situation in which they are exposed to online fake information. This exploratory study revealed that both children and adolescents are not preoccupied with the trustworthiness of the information they are exposed to in social media. While only 4 of the 54 students stated that they would not choose to save a fake animal (from a hoax website), all four of them had reasons that proved that they did not perceive the information as being a hoax. Thus, participants proved that they would act upon being exposed to fake information even when they do not trust the source.

Keywords: fake news and online information; children and adolescents and fake news; vulnerability to fake news

1. Introduction

In the summer of 2018, a Facebook user uploaded a moving story that caught the eye of people on the social platform as well as the media. The post presented the efforts of a Romanian that saved more than 70 lives from the Greece wildfires, which were a widely publicized event at the time. The author stated that the "hero" was hospitalized in Vienna with 70% body surface burns. A photo of the man's burnt face had gone viral. It was only a few days later that the story was pointed out to be fake and the photo was proven to show actor Ryan Reynolds wearing makeup for his role in the movie Deadpool [1]. This is far from a singular incident of fake news being spread through Facebook, indicating the fact that it is not necessary for a story to be extremely detailed or particularly credible for it to have an impact.

Today, more than ever in the history of mankind, the process of acquiring information is simpler, being facilitated by the Internet. Social media platforms are now preferred by individuals in terms of acquiring information, due to their quick and easy access. This means that the diffusion of data spread is almost instant, helping fake news reach a remarkable number of people. The free and effortless access to information also brings up an urgent need for fact checking. Thus, to be certain of the accuracy of the information, it is imperative that people assess the online news they come across and consider

to be noteworthy. Consequently, the issue of people's ability to distinguish fake news from truthful information arises, the case of young people being an important one, as this age group is extremely exposed to online information.

Even though multiple studies have been conducted on schoolchildren around the world [2–7], fake news has only recently been approached [8,9] from a Romanian children (especially high school students) perspective. This study seeks to add to the academic examination of the fake news phenomenon and to the study of children's ability to identify fake news. It addresses these issues through an exploratory research, using a one-group post-test only quasi-experimental design, mixed with qualitative debriefing sessions. The findings revealed that even though only 4 of the 54 students stated that they would not save a fake animal, thus indicating they did not trust the hoax source, all 4 of them had reasons that proved the contrary. The children and adolescents proved that they would act upon being exposed to fake information even when they do not trust the source.

This article initially examines the scholarly perspectives on fake news and the particular ways individuals—especially young people—perceive this phenomenon, followed by the second section of the article presenting the Methods and Materials and comparing the results of the experiment conducted in the Romanian study in 2019 with the results of the 2017 study conducted in The Netherlands. The paper ends with a discussion of the findings and suggestions regarding the manners in which people could handle fake news.

2. Literature Review

2.1. Digital Literacy and Fake News

The existence and rapid evolution of digital media have led to the development of new ways of thinking, obtaining information, learning, and relating to others. Today, the way people born in the last four decades process things in terms of internalizing information is profoundly different from that of those who were of mature age when new communication and information technologies were introduced into everyday life [10]. This dissimilarity is mainly a result of the way the newer generations grew up surrounded by ICT.

Digital natives, the term introduced by Prensky [10,11] and later critiqued by scholars, stands for people born after the 1980s, who are fluent in the online language of computers, and that have "e-lives" that revolve around the Internet. One of the matters most discussed by scholars regarding digital natives refers to their critical thinking ability when assessing online information. Some authors even define the concept of digital natives, emphasizing rather low results when taking into consideration the critical thinking ability of this generation, which uses "the digital tools of today, without reflecting on what they are or how they can be used" [12] (p. 23). Internet access leads to a major change in both the information process and the way in which individuals use information after retrieving it. Some authors [13–18] disagree with the use of the digital natives and digital immigrants concepts. Their research confirms the contrary and shows that the perspectives claiming that people who grew up surrounded by digital media "are universally savvy with information and communication technologies" are rarely founded on empirical evidence [15] (p. 92).

Research conducted by Hargittai [15] demonstrates that socioeconomic status is an important predictor for the inclusion of the Internet in day to day life, with those from more privileged backgrounds using it in more activities and in a more informed way. Similarly, Gallardo-Echenique et al. [18] state that age is not as important a factor as gender, education, experience, social inclusion, culture, institutional context, and socioeconomic context and suggest the use of digital learners instead of digital natives.

The issue of individuals' ability to adequately evaluate and use information has become more pronounced, as the access to both acquiring and sharing information is the easiest it has been yet. This is not a concern particular to the digital age, as there has always been a need to properly analyze the reliability of information, which has been essential for learning even before the information revolution.

However, individuals are now constantly in contact with online information—not difficult to influence and share—so the ability to analytically assess information can be viewed as a "survival skill" [19].

With recent decades' development of the digital environment, individuals are increasingly required to improve their ability to use new technologies in order to perform effectively in society. Generally speaking, a digitally literate individual "should be able to adapt to new and emerging technologies quickly, and pick up easily new semiotic languages for communication as they arise" [20] (p. 1066). While most approaches that describe young people as being digitally literate discuss their ability to easily use new digital technologies, only some of these perspectives question their ability to critically analyze information obtained through these technologies [10,21,22].

Digital literacy has been defined as the "awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate, analyze and synthesize digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process" [21] (p. 135). Using such approach, we can find a direct link between the concept of digital literacy, analytical thinking ability, and the intention to create constructive social actions. This approach thus suggests that critical thinking, the ability to objectively analyze information retrieved online, and the aptitude to form independent opinions should be among the central features of digital literacy.

Ng [20] is also one of the authors who paid attention to critical thinking in discussing digital literacy, proposing a multidimensional model. The cognitive dimension of the model is associated with critical thinking in the case of the search, evaluation, and content creation processes. This dimension requires that the individual has knowledge about the ethical and legal issues that one must respect when using content from digital sources (e.g., copyright and plagiarism). According to Ng, digital literacy involves using the filter of one's own thinking when retrieving information in the online environment, the individual having varied knowledge to help him critically analyze the information.

Digital literacy includes a set of soft skills that need to target both technical skills—the use of digital tools—and non-technical skills that rather consist of understanding, analyzing, and evaluating information (cognitive, socioemotional etc.). Thus, it would be appropriate for the term to be used "to speak of a full range of cognitive, social and emotional competences including the use of texts, tools and technologies; about critical thinking and analytical skills" [23] (p. 17).

There are significant dissimilarities between people of different ages or even between people in the same age segment when talking about digital literacy, so categorizing people as digitally literate or illiterate based solely on age would be inappropriate. However, digital literacy, as a set of skills including both technical abilities that allow people to use new technologies and non-technical skills that help individuals assess the information they retrieve online while acting like a polygraph for untruthful or manipulative information is crucial for people of all ages in today's society.

Fake news has existed over time in various forms since the proliferation of untrue information through word of mouth. It has then progressively become easier and quicker for people to be reached by information—reliable or fake—once printing was invented and today, with the almost omnipresent use of the Internet.

Fake news is a concept that can be defined as verifiable untrue information, intentionally transmitted by one person to mislead other individuals [24,25]. Social media is becoming the main source of information for an increasing number of individuals, so "misinformation seems to have found a new channel" [26] (p. 138). Research looking at fake news dissemination [5,27] showed results that are increasingly unsettling. In a recent study, Lazer et al. [27] noted that on Twitter, fake information is usually reposted by more people and much faster than truthful information is, especially in the case of politics news. Similarly, an eleven years-long study [5] that investigated the distribution of both true and false information on Twitter revealed that fake data spreading is quicker and reaches more individuals than accurate information. The authors also noted that false information was more

common than truthful in most of the cases, which caused people to distribute fake news more often in comparison to true information.

Tandoc et al. [26] explain why they consider financial and ideological reasons and motives are the two motives underlying the spread of false information. Fake news often touches upon scandalous topics, which quickly go viral online, thus attracting clicks that convert into revenue. A website that constantly offers intriguing information, discussing controversial topics, becomes appealing to individuals; the large number of publication visits is converted into financial gains following the exposure of these visitors to paid advertisements on the site.

Allcott and Gentzkow [25] analyze the ideological motivation of individuals and claim that they use fake news in order to convey certain ideas or to promote people, often implying the reputation of other entities being compromised. The authors note that individuals driven by financial motivations are considerably more numerous than those who have ideological goals. Allcott and Gentzkow [25] have observed that, in most cases, the dissemination of fake news is related to their content. Thus, news with political content have a noteworthy potential to attract clicks and generate profits—the authors explain this idea by talking about a group of young people from Macedonia, which made tens of thousands of dollars in 2016, after they shared false information during the US election campaign.

Social networks have thus become an environment where almost anyone can provide information to an extremely large number of people, an environment where both credible sources and fake news can be found; the distinction between them is difficult to distinguish and difficult to achieve. Fake news, like real news, has gone viral on social media. Although we can measure the number of individuals who have been exposed to fake news or those who have distributed fake news, we cannot determine how many people have actually read or been affected by this type of information. Nevertheless, the spread of fake news can be amplified by social media, as individuals who retrieve and distribute information implicitly approve it [27].

Fake news is a phenomenon that gains credibility by hiding behind the mask of legitimacy, so that people tend not to question it. People are often inclined to consider fake news to be true, as it closely mimics the structure of truthful news and sometimes even refers to fictitious sources in order to provide a sense of reliability [26]. A study conducted in 2016 [6] showed that young people are unable to distinguish between the real Twitter account of the American TV channel Fox News and one that faultily imitates it. Thus, the influence of fake news on Internet users is not surprising, as it is essential that people have/develop the ability to think critically in order to be able to distinguish between true and false information. Domonoske [6] presents a research conducted at Stanford University on the ability of people to identify fake news. As anticipated in the study's title—Students Have 'Dismaying' Inability to Tell Fake News From Real, Study Finds—the results show that from middle schoolers to college students, children and teenagers have limited ability to tell whether information is fake or real. The majority of the 7800 people who were part of the research failed to indicate which of the information was false. Moreover, most of the study participants accepted the information provided as true, without checking if the sources were reliable.

Domonoske [6] concludes by stating that if young people are the future, the future might be ill-informed, and—one could also state—not skillful enough when it comes to critical thinking. Fake information is widely shared by young people who often do this without assessing it, but the responsibility cannot be fully attributed to them because they were not taught to do differently, argues the study's author.

The fake news phenomenon became more visible in 2016, in the context of the presidential elections in the United States. Since then, Facebook and Google have made public reassurances regarding their effort on providing solutions that would fight the threat posed by this phenomenon [28]. Although social platforms and search engines strive to limit or even stop false information, this process is difficult and time-consuming, so people using the Internet need to be able to evaluate and identify manipulated information.

2.2. Fake News Identifying Processes

Even though fake news' negative effects are known or can be perceived, the solutions to these problems are more difficult to identify. Most of the scholarly approaches that discuss fake news and the measures that can be taken to limit this phenomenon propose two directions—technological solutions, targeting especially social media platforms [28,29] and guidance for human fake news identification [24,26,29,30].

Technological advancement nowadays is inevitable; consequently, different companies are trying to offer technological solutions to stop the spread of false information in the digital environment. Even if today's artificial intelligence would have the ability to fully filter out fake news, Waldrop [29] argues this process would be difficult because of the free speech right. It is extremely problematic for online platforms to draw a boundary between what is admitted as true information and what is rejected as being fake news, because there is a sensitive border between stopping fake news in the online environment and violating the right to free expression, the author explains.

The digital natives and digital immigrants concepts proposed by Prensky have been debunked, but in his work on the differences between today's students and past generations, the author [11] discusses how young people have adapted to the 21st century, while schools still use a twentieth-century model when approaching the informing process, thus "most digital skills and knowledge are developed outside of formal education" [20] (p. 1066). This is a valid point of view particularly in the case of Romania, where technology is not used enough in the educational process; the consequences have been observed especially recently, when due to the pandemic lockdown, online schooling was a controversial topic [31], as in some cases, the digital environment has not been used properly by teachers and because new technologies are not widely used in Romanian teaching. The negative effects of the fake news phenomenon on both individuals and society have led to the emergence of new school and university courses. Media literacy courses are proliferating worldwide at all educational levels. Through the "Calling Bullshit" course at the University of Washington, students are taught how to detect misleading images or false statistical data, while the Italian Ministry of Education has organized a digital literacy course in eight thousand high schools to help students identify fake news [29].

Learning from the online analyzing process of some of the most prestigious journalists and fact-checking organizations in the US, McGrew et al. [28] propose three strategies that teachers could adapt to help pupils and students become smarter users of the Internet.

The first strategy involves realizing teaching young people to read "laterally"—checking the credibility of a source not only "vertically" by analyzing the elements found on the site (design, logo, references at the end of the article etc.), but to also search other web pages to find out more about the credibility of the analyzed source. Teachers could also help students make smarter search results selections, the authors suggest. When hurriedly looking for online sources, people tend to click on the first shown result, which could greatly influence the quality and truthfulness of the retrieved information. However, when choosing a source, individuals need to consider various issues, including the URL (source web address) and snippets of text that describe the site. The third method proposed by McGrew et al. [28] refers to the use of the Wikipedia site as an example in exercises that involve comparing true information with false information and especially when practicing lateral reading.

Through their work on the pedagogic approaches of the fake news phenomenon, McDougall et al. [32] collected and disseminated the findings of relevant research, of which the main purpose has been to propose an educational "preventative antidote" to the fake news threat. In a study [33] on 1676 university students and 524 professors in Brazil, Spain, Portugal, and Venezuela, Romero-Rodriguez et al. show that the findings "point to a is a need to develop transversal actions for instructing both university professors and students in media competences to face an ecosystem dominated by fake news and disinformation, as well as public policies directed at improving these skills among citizens at large" [33] (p. 326). In the process of instructing teachers about the fake news phenomenon and the ways they could adapt the information for their students, there is some relevant research proposing various materials to refer to [34–36] when teaching students of all education levels.

Some other recent studies [37,38] propose legislative measures as well as placing more emphasis on truthful alternatives of the fake stories. Nonetheless, all legal measures should be carefully stated, as they could rather easily become a threat to freedom of speech. This has been the case of the German Network Enforcement Act [39], critiqued by the UN's Special Rapporteur on Freedom of Expression, which stated that the legal procedure could potentially have greater effects than censorship [37] (p. 3).

3. Children and Adolescents' Ability to Identify Fake News in Other Studies

Over the years, several authors researched students' ability to identify fake news. The study conducted by Leu et al. [4] in the US was the first to propose the use of the hoax website http://zapatopi.net/treeoctopus in fake news research. This has then been used as inspiration by other studies [2,3] in The Netherlands and in the US. Both the results (Table 1) and the studies' designs (Table 2) were different, whilst all of them show low results in school children's ability to identify hoax sources.

Table 1. Overview of similar studies.

Study No.	Authors	Respondents	Results
1	Leu et al. (2007)	53 school children, 13 years old	6 out of 53 school children (11%) recognized the hoax source as fake.
2	Loos et al. (2018)	27 school children, 11–12 years old	2 out of 27 respondents (4%) recognized the website as being a hoax and explained why.
3	Pilgrim et al. (2019)	68 students, first graders to fifth graders	24 out of 68 school children (35%) did not trust the hoax website.

Table 2. Methodology used in studies presented in Table 1.

Study No.	Authors	Methodology
1	Leu et al. (2007)	The students were exposed to the spoof site Save The Northwest Pacific Tree Octopus (http://zapatopi.net/treeoctopus). They were then asked by another class through a fictional message to locate and evaluate the reliability of the spoof website. The students had to provide three reasons for their answer and summarize the most important information from that site. They were then asked to send an e-mail containing their information or to post this on a blog site. Following the activity, students were interviewed to ensure that they were familiar with the term "reliable", an important concept in the task.
2	Loos et al. (2018)	The author of this article was introduced by the teacher to the schoolchildren. The teacher and the respondents were told that the experiment would be an online reading comprehension exercise. The children were asked to visit the hoax website (http://zapatopi.net/treeoctopus/) and were asked to look at it, click on any links, and not hurry. Then, they were asked to answer five questions, including *Q3. If Greenpeace were to ask you to save this octopus, would you support this and sign? YES, because [. . .] NO, because [. . .] (choose one).* The pupils who answered "YES" to Q3 were judged as perceiving the site as a reliable one. In this way, it was not necessary to explicitly ask about the reliability of the site, which would have risked priming them. The schoolchildren were debriefed after the session and they received a new media literacies training.
3	Pilgrim et al. (2019)	As part of a larger project, the authors used the tree octopus hoax website (http://zapatopi.net/treeoctopus/) and interviewed 68 students in first through fifth grade to explore their abilities to critically examine the hoax website for trustworthiness and reliability. In one-on-one interviews, students were asked to review the tree octopus website and were then asked, "How can you tell if this website has accurate (or true) information?"

4. Materials and Methods

Current Study

Loos et al. [2] conducted an empirical study on 27 children aged 11 and 12 from the Netherlands—"Safe the Pacific Northwest Tree Octopus": a hoax revisited. Or: How vulnerable

are school children to Fake News? An online source was used in the research: the hoax website https://zapatopi.net/treeoctopus/, originally used by Leu et al. [4] in research on online reading comprehension, which led to other studies on fake news using different research designs, but the same online source.

One of the researchers was presented to the children by their teacher in the classroom. Both the students and the teacher were told that the study would look at children's ability to understand an online text; then, the students were instructed to access the website link, read the information, and click on any part of the site. They were encouraged to also search for any online information they wanted, and the site had been automatically translated into Dutch. The school children were then given a questionnaire and were asked to answer several questions, including "*If Greenpeace would ask you to save this animal, would you support this and sign the petition?*". The results of the Dutch study revealed that only two out of the 27 children in the research classified the website as false. The authors explain that there is a possibility that the students' responses were influenced by the environment in which the experiment was conducted—the classroom, in the presence of the teacher, as well as by the emotional involvement with the subject of the site—an animal in danger of going extinct.

This study aims to assess Romanian children and adolescents' ability to distinguish truthful information from fake news and test the theory based on other studies' [2,4,6,7,28] findings, claiming that digital natives cannot recognize fake news. In this study, two research questions are answered:

RQ1: Do Romanian children (10–11 years old, N = 33) and adolescents (18–19 years old, N = 21) perceive the hoax website *Salvăm Jacalopul (Saving the jackalope)* as reliable, as the Dutch school children did with *Save The Pacific Northwest Tree Octopus*?

RQ2: What are the mechanisms underlying the fake news identifying process?

Similarly to the previous study, the first part of this research is based on exploratory research, using one-group post-test only quasi-experimental design, mixed with qualitative debriefing sessions on a sample of N = 54 Romanian children and teenagers (26 girls and 28 boys) from two age categories: 10–11 years old and 18–19 years old. All participants lived in the same small city and went to a public school with no fake news, digital literacy, or online skills programs. Parental consent for all minor participants was obtained before the study. The research was conducted in accordance with the Declaration of Helsinki, and the protocol was approved by the Ethics Committee of SNSPA (National University of Political Studies and Public Administration)[1]. The research conducted in Romania was based on the study conducted by Loos et al. [2], following the same structure, but using a different online source—http://salvamjacalopul.wordpress.com, a website presenting information on an animal that does not exist. The choice not to use the tree octopus website was made based on two reasons: its aspect is considerably different from the way most websites look today, as it was built more than twenty years ago; also, the content presented by the site could be a limit for the research, because it could not be possible for an octopus to be part of the Romanian fauna, which could have corrupted the way subjects perceived the site.

When discussing research design, it is important to make a few mentions about the language used in the experiment. It cannot be easily disputed that "English has acquired this 'hyper-central' role not because it is a superior or intrinsically more useful language, but as a reflection of geo-political realities." [40] (p. 14). Even though there are some relevant studies looking at the influence language—and especially English—can have on the trust in media outlets [41], both the website and the research instrument were constructed in Romanian, as a considerable number of the participants were not fluent English speakers. The website gives diverse information about the animal, a considerable amount of it being enunciated as a mockery, following the original website's style: *Jackalopes are wild*

[1] Note that the Ethics Committee at SNSPA does not have an identification code. The ethics certificate for the current research (with no identification number) has been issued by the Ethics Committee at SNSPA prior to the research and it could be available at any request.

animals and should not live in captivity. [. . .] Also, they're hard to keep on a leash; Participate in marches dressed as a jackalope and have a friend attack you in a lumberjack costume to raise awareness.

Participants were asked to access the website and complete a questionnaire about the online source, then the researcher explained the purpose of the study and spoke about the fake news phenomenon and its negative impact. It was explained to the students that they were randomly selected to participate in a study whose purpose is to measure the ability of digital natives to understand an online text. After being presented with this research objective, they received through the Facebook or the WhatsApp group of the class the link that led to the website created by the researcher for this study. Another difference from the Dutch study research design was that the students participated in the experiment without receiving an introduction about the fake news phenomenon, in order to avoid priming.

The research instrument was constructed similarly to the questionnaire used in the Dutch study [2], being composed of five questions:

Q1. This website presents an endangered animal. What country does it live in?
Q2. According to the website, the jackalope is an endangered species. For what reason?
Q3. If Greenpeace were to ask you to save this animal, would you support this by signing? YES, because [. . .] NO, because [. . .] (choose one).
Q4. Were there parts of the website you did not understand? If so, please explain.
Q5. If there are any other comments about this website you would like to make, please write them below.

Students were told that they could read all the information on the site, including those presented in the secondary sections of the source, that they could search for additional information on the Internet, and that there was no time limit for website observation. After spending enough time learning about the topic presented by the website, the students were offered the questionnaire, which was completed anonymously. The researcher then explained that the *jackalope* does not exist, revealed the real objective of the study, and spoke to them about the importance of the ability to recognize fake news in the online environment. The open discussions following the experiment had the purpose of exploring the ways children and adolescents approach the fake news identifying process and the aspects that tend to potentiate the effects of fake news.

5. Results

The main focus was placed on Q3—If Greenpeace were to ask you to save this animal, would you support this by signing? YES, because [. . .] NO, because [. . .] (choose one), as it addressed the children and adolescents' disposition to undertake action when asked by an external source. Therefore, the participants that answered the third question affirmatively were considered to perceive the hoax website as trustworthy, thus avoiding biasing the students by directly asking them if the source was reliable to them.

The study conducted in the Netherlands by Loos et al. [2] in 2017 found that 2 of the 27 children in the study group recognized the hoax site as being fake. The authors suggest that there were some factors that had an influence on the respondents, including the formal environment, the trust they had in their teacher, and the fact that the animal was presented as being endangered. The latter was confirmed in the Romanian study, as 20 of the 54 respondents said they would support the Greenpeace initiative because they consider protecting at-risk animals to be especially important.

The experiment was conducted in the respondents' school and the researcher was introduced to the students by their teacher, these two aspects having increased potential to influence the answers provided and the way the respondents related to the information. During the debriefing sessions, both the students and the teachers' feedback confirmed the possibility that the answers were distorted by the environment ("*They have learned to adapt to any kind of situation presented in the texts they analyze—real or fictional—and often do not ask too many questions*", "*We also took into account the fact that we were asked to take this seriously and we did not think that would be something fake*"). Two of the high school students

expressed significant doubts about the *jackalope* during the experiment and concluded that the animal does not exist. Nonetheless, both of them answered that they would sign the Greenpeace petition, motivating their choice by explaining that they feared being ridiculed by their peers, even if they were initially told the responses were anonymous ("*We saw that everyone was answering and we didn't want them to make a fool of ourselves*"). Thus, in addition to the sensitive subject, the space, and the teacher's authority, peer pressure should be considered when observing the factors biasing the respondents.

In Romania, only 3 of the 33 children and 1 of the 21 adolescents indicated that they would not sign a petition to save the *jackalope*. Even though, following the Loos et al. [2] study's design, this would suggest that the four respondents perceived the website as fake, their motives demonstrated the contrary—"*No, because it is a dangerous creature*", "*No, as it is an aggressive animal*", "*No, because it kills*". Consequently, when analyzing this study's results or similar studies' findings, the respondents' motives should be considered. Accordingly, it would be recommended for future similar studies to include open discussions, interviews, or focus groups in their debriefing sessions, with the purpose of understanding the results accurately.

When asked if there were any additional comments they would like to make, three of the high school students confirmed they thought the source was reliable: "*I found it interesting and I have learned new things*", "*It would be useful if there was a video material on the site and I think it should emphasize more the fact that humans, through their selfish actions, destroy this species*". Nine of the 33 children wrote additional observations in this part of the questionnaire. Their statements could be placed into one of the two categories: suggesting the respondents perceived the website as being reliable ("*Great! I like that it wants to save this animal*", "*I think this website is useful, because it tries to save an endangered animal*", "*I really liked the pictures*") or on the contrary, suggesting the respondents doubted the trustworthiness of the source ("*Does this animal exist in the world?*", "*The pictures make no sense*", "*Is this animal real?*").

The open discussions that followed the questionnaire revealed interesting facts about the reasons the students chose specific answers over others and about their thoughts on the website. Some of the high school respondents claimed that they searched for supplementary information on the Internet, but failed to retrieve relevant results "*I looked online, but didn't find any photo of it*", "*Me and my desk mate talked about not answering the question, as we typed the information on the Internet and didn't get any results back, but we thought that everyone was filling up the questionnaire, so . . .* ". Hence, there were a few respondents who doubted the truthfulness of the source, but still affirmed that they would perform an action when asked by the said source. This is maybe one of the most important results of the study.

There could be important consequences of the fact that children and teenagers do as unreliable sources tell them to, on both an individual level and a societal level. Since 18- and 19-year-old high school students can use their right to vote, undertaking action when asked by an unreliable source could be a menace to the wellbeing of society. Moreover, the safety of children would be threatened by potentially being manipulated by dishonest entities.

Inasmuch as the research participants did not recognize the website as being a hoax, when observing the fake news identification process, there is an apparent lack of mechanisms helping pupils to fact check online information. During the open discussions, only three of the 54 students responded affirmatively when asked if they searched for additional online information, as the researcher mentioned this as being allowed prior to the experiment. No participant performed a reverse image search or considered the website URL to indicate an unreliable source, even though the URL extension was "wordpress.com", suggesting that the website author could be an untrustworthy or unauthorized individual.

6. Discussion and Conclusions

This study showed that only 4 of the 54 children and adolescents said they would not sign a petition to save the endangered *jackalope* if asked by Greenpeace, but through the open discussions and the answers given to the following questions, these 4 respondents proved to have considered the hoax website as trustworthy, leading to no respondent considering the source as fake. Hence,

the Romanian study's results are even worse than the 2017 Dutch [2] research results, where 2 of the 27 school children recognized the given source as unreliable and explained why they perceived it in such a manner. When considering that the four respondents answering negatively to Q3 identified the source as being a hoax, however, the percentage of the Romanian respondents recognizing fake news (4%) is the same as their Dutch counterparts' [2], but lower than the 2007 [4] (11%) and the 2019 [3] (35%) US percentages.

Most of the authors discussing possible solutions for the fake news phenomenon suggest technological solutions and supporting individuals in the fake news identification process. Considering the scholarly approaches on digital literacy and fake news [24,26,28–30] and the results of this study, the main way individuals could get to a better level of fake news identification is arguably through education. Italy and the US are just some of the states that include fake news identifying subjects in their curriculums [29]. The Romanian school curriculum currently lacks subjects—mandatory or optional—to approach digital literacy, the fake news phenomenon, and the effects it has on people or the ways people could distinguish between fake news and trustworthy information. In addition, carefully constructed legal measures could be adopted both on a national and a European level in order for the fake news outlets and authors to be held responsible and be discouraged.

This study had a number of limitations which should be considered when cited or replicated. The majority of these aspects are related to the methods or the research instrument. The number of study participants (54), even if higher than similar previous studies [2,4], could be increased in the case of future research, so that the findings could further enable generalization. In addition, not enough sociodemographic information was gathered through the questionnaire, which would have been relevant when discussing different ways the environment (educational, economic, social, digital) can influence children and teenagers' ability to identify online fake news. As priorly mentioned, the location where the experiment was conducted (the classroom) potentially affected the participants' responses.

It is recommended to conduct a similar empirical study, with adjustments to the research design, using a control group and an experimental group to receive indication on how to identify fake news online, while including a digital literacy scale. The research could also involve three age groups—children, adults, and seniors, testing Prensky's perspective [10] on the differences between digital natives and digital immigrants in the case of digital literacy. Additionally, researchers should keep in mind that several factors could bias the respondents (e.g., the experiment subject, peer pressure, or the trust the respondents have in the teacher or the person introducing the researcher).

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References

1. Antena3.ro. Available online: https://bit.ly/39aeaI9 (accessed on 23 February 2019).
2. Loos, E.; Ivan, L.; Leu, D. "Save the Pacific Northwest tree octopus": A hoax revisited. Or: How vulnerable are school children to fake news? *Inf. Learn. Sci.* **2018**, *119*, 514–528. [CrossRef]
3. Pilgrim, J.; Vasinda, S.; Bledsoe, C.; Martinez, E. Critical Thinking Is Critical: Octopuses, Online Sources, and Reliability Reasoning. *Read. Teach.* **2019**, *73*, 85–93. [CrossRef]
4. Leu, D.J.; Reinking, D.; Carter, A.; Castek, J.; Coiro, J.; Henry, L.A.; Zawilinski, L. Defining online reading comprehension: Using think aloud verbal protocols to refine a preliminary model of Internet reading comprehension processes. Presented at the American Educational Research Association, Chicago, IL, USA, 2007; Available online: http://docs.google.com/Doc?id=dcbjhrtq_10djqrhz (accessed on 18 August 2020).
5. Vosoughi, S.; Roy, D.; Aral, S. The spread of true and false news online. *Science* **2018**, *359*, 1146–1151. [CrossRef] [PubMed]
6. Domonoske, C. Students Have 'Dismaying' Inability to Tell Fake News from Real, Study Finds. *Natl. Public Radio* **2016**. Available online: https://n.pr/3mvY3uB (accessed on 18 August 2020).
7. Scholz-Crane, A. Evaluating the future: A preliminary study of the process of how undergraduate students evaluate Web sources. *Ref. Serv. Rev.* **1998**, *26*, 53–60. [CrossRef]

8. Malita, L.; Grosseck, G. Tackling Fake News in a Digital Literacy Curriculum. *Int. Sci. Conf. eLearning Softw. Educ.* **2018**, *4*, 343–350.
9. Frunzaru, V.; Corbu, N. Students' attitudes towards knowledge and the future of work. *Kybernetes* **2020**, *49*, 1987–2002. [CrossRef]
10. Prensky, M. Digital Natives, Digital Immigrants. In *On the Horizon*; MCB University Press: Bingley, UK, 2001; Volume 9, pp. 1–16.
11. Prensky, M. Listen to the natives. *Educ. Leadersh.* **2005**, *63*, 8–13.
12. Alexander, B.; Adams Becker, S.; Cummins, M.; Giesinger, C.H. *Digital Literacy in Higher Education, Part II: An NMC Horizon Project Strategic Brief*; The New Media Consortium: Austin, TX, USA, 2017; pp. 1–37.
13. Loos, E. Senior citizens: Digital immigrants in their own country? *Observatorio (OBS*)* **2012**, *6*. [CrossRef]
14. Harding, T. Digital Natives and Digital Immigrants, Zur Institute. 2010. Available online: http://ccnmtl.columbia.edu/enhanced/primers/digital_natives.html (accessed on 25 May 2019).
15. Hargittai, E. Digital na(t)ives? Variation in internet skills and uses among members of the "net generation". *Sociol. Inq.* **2010**, *80*, 92–113. [CrossRef]
16. Jones, C. A new generation of learners? The Net Generation and Digital Natives. *Learn. Media Technol.* **2010**, *35*, 365–368. [CrossRef]
17. Margaryan, A.; Littlejohn, A. Are digital natives a myth or reality? University students' use of digital technologies. *Comput. Educ.* **2011**, *56*, 429–440. [CrossRef]
18. Gallardo-Echenique, E.E.; Marqués-Molías, L.; Bullen, M.; Strijbos, J.W. Let's talk about digital learners in the digital era. *Int. Rev. Res. Open Distrib. Learn.* **2015**, *16*, 156–187. [CrossRef]
19. Eshet-Alkalai, Y. Digital Literacy: A Conceptual Framework for Survival Skills in the Digital Era. *J. Educ. Multimed. Hypermedia* **2004**, *13*, 93–106.
20. Ng, W. Can we teach digital natives digital literacy? *Comput. Educ.* **2012**, *59*, 1065–1078. [CrossRef]
21. Martin, A. DigEuLit—A European Framework for Digital Literacy: A Progress Report. *J. eLiteracy* **2005**, *2*, 130–136.
22. Eshet-Alkalai, Y.; Amichai-Hamburger, Y. Experiments in digital literacy. *CyberPsychology Behav.* **2004**, *7*, 421–429. [CrossRef]
23. Hobbs, R. *Digital and Media Literacy: A Plan of Action. A White Paper on the Digital and Media Literacy Recommendations of the Knight Commission on the Information Needs of Communities in a Democracy*; Aspen Institute: Washington, DC, USA, 2010.
24. Shu, K.; Sliva, A.; Wang, S.; Tang, J.; Liu, H. Fake news detection on social media: A data mining perspective. *ACM SIGKDD Explor. Newsl.* **2017**, *19*, 22–36. [CrossRef]
25. Allcott, H.; Gentzkow, M. Social Media and Fake News in the 2016 Election. *J. Econ. Perspect.* **2017**, *31*, 211–236. [CrossRef]
26. Tandoc, E.C., Jr.; Lim, Z.W.; Ling, R. Defining "fake news" A typology of scholarly definitions. *Digit. J.* **2018**, *6*, 137–153.
27. Lazer, D.M.; Baum, M.A.; Benkler, Y.; Berinsky, A.J.; Greenhill, K.M.; Menczer, F.; Zittrain, J.L. The science of fake news. *Science* **2018**, *359*, 1094–1098. [CrossRef] [PubMed]
28. McGrew, S.; Ortega, T.; Breakstone, J.; Wineburg, S. The Challenge That's Bigger than Fake News: Civic Reasoning in a Social Media Environment. *Am. Educ.* **2017**, *41*, 4.
29. Waldrop, M.M. News Feature: The genuine problem of fake news. *Proc. Natl. Acad. Sci. USA* **2017**, *114*, 12631–12634. [CrossRef]
30. Pennycook, G.; Rand, D.G. Who falls for fake news? The roles of bullshit receptivity, overclaiming, familiarity, and analytic thinking. *J. Personal.* **2020**, *88*, 185–200. [CrossRef]
31. Mediafax.ro. Available online: https://bit.ly/319hKQf (accessed on 17 August 2020).
32. McDougall, J.; Brites, M.J.; Couto, M.J.; Lucas, C. Digital literacy, fake news and education/Alfabetización digital, fake news y educación. *Cult. Educ.* **2019**, *31*, 203–212. [CrossRef]
33. Romero-Rodriguez, L.M.; Contreras-Pulido, P.; Pérez-Rodríguez, M.A. Media competencies of university professors and students. Comparison of levels in Spain, Portugal, Brazil and Venezuela/Las competencias mediáticas de profesores y estudiantes universitarios. Comparación de niveles en España, Portugal, Brasil y Venezuela. *Cult. Educ.* **2019**, *31*, 326–368. [CrossRef]
34. Posetti, J.; Matthews, A. *A Short Guide to the History of 'Fake News' and Disinformation*; International Center for Journalists: Washongton, DC, USA, 2018; Volume 7.

35. McDougall, J.; Zezulková, M.; Van Driel, B.; Sternadel, D. *Teaching Media Literacy in Europe: Evidence of Effective School Practices in Primary and Secondary Education, NESET II Report*; Publications Office of the European Union: Luxembourg, 2018.
36. Musgrove, A.T.; Powers, J.R.; Rebar, L.C.; Musgrove, G.J. Real or fake? Resources for teaching college students how to identify fake news. *Coll. Undergrad. Libr.* **2018**, *25*, 243–260. [CrossRef]
37. Alemanno, A. How to counter fake news? a taxonomy of anti-fake news approaches. *Eur. J. Risk Regul.* **2018**, *9*, 1–5. [CrossRef]
38. Mele, N.; Lazer, D.; Baum, M.; Grinberg, N.; Friedland, L.; Joseph, K.; Hobbs, W.; Mattsson, C. *Combating Fake News: An Agenda for Research and Action*; Harvard University: Cambridge, MA, USA, 2017.
39. Bmjv.de. Available online: https://bit.ly/3iQKBik (accessed on 18 August 2020).
40. King, L. *The Impact of Multilingualism on Global Education and Language Learning*; Cambridge English Language Assessment: Cambridge, UK, 2017.
41. Faustini, P.H.A.; Covões, T.F. Fake news detection in multiple platforms and languages. *Expert Syst. Appl.* **2020**, *158*. [CrossRef]



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