p'arts, hum' Papers in Arts and Humanities

Vol. 5, No. 2, Dec. 2025
https://doi.org/10.52885/b2tsch62

Fake News on Both Sides of the Border: Media Literacy Among Young Hungarians Living in the Partium Region (Romania) and Along the Hungarian Border

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Abstract

Digitalization and online social media platforms have radically transformed the flow of information. Anyone can disseminate almost any information on these platforms, including fake news and other fraudulent messages. The latter includes phishing scams and fake sweepstakes. In this environment, media literacy is critical, as it enables individuals to critically evaluate media content from multiple perspectives and identify fraudulent content. Most research focusing on media literacy among young people has been based on self-reporting, examining a specific type of information, and only in the context of a single country. There is a lack of research exploring differences in media literacy among members of an ethnic group living in multiple countries. Our research simultaneously assesses, in practice, the ability to identify fake news, phishing scams, and fake sweepstakes among young Hungarians living in two neighboring countries on opposite sides of the Romanian–Hungarian border. The questionnaire consisted of 20 screenshots of real social media posts, emails, Messenger messages, and SMS messages. Each contained either verified false or real information, and participants had to decide the message's authenticity based on clues in the screenshot. Based on the results, it can be said that young Hungarians in Partium scored significantly lower across all three deception categories than young Hungarians living across the border. This may be due to fundamental deficiencies in their media

awareness, the different socio-cultural, infrastructural, and educational conditions in the two countries, and their status as an ethnic minority, but sampling and questionnaire bias may also play a role.

Keywords: media literacy, phishing, fake news, students, Partium

Introduction

In addition to their positive effects (such as unrestricted and easy communication and instant access to news and information), online social networks also facilitate the spread of fake news (Aïmeur et al., 2023). This phenomenon increases the number of unreliable sources and false content, disrupting public discourse and reducing trust in the media (Bodaghi et al., 2024). Krekó classifies fake news as disinformation, which he defines as a set of manipulation techniques intended to deliberately mislead (Krekó, 2018). Walters believes that fake news is "(a) content holding itself out as a news piece (b) that makes objectively false assertions that given events have occurred (c) in a materially false manner" (Walters, 2018, p. 142). Based on all this, it can be said that fake news is "news articles that are intentionally and verifiably false, and could mislead readers" (Allcott & Gentzkow, 2017, p. 213), which are typically spread on the internet and social media. "Digital fake news" is deliberately false information disseminated on online platforms in the form of news articles, images, or videos, most often related to well-known individuals or events of great interest, appearing to be reliable but appearing on unverified, dubious websites/social media pages (Kenyeres & Szűts, 2024). Veszelszki (2017) extends the scope of fake news to various internet scams, including phishing. According to Harrison et al. (2016), "Phishing is an attempt to gain personal and sensitive information from individuals through online deception" (p. 265). Phishing primarily uses social engineering and some kind of technical solution to obtain users' personal data (Yang et al., 2022). The technical solutions usually include a bait email with a link that takes the user to a website that looks deceptively similar to an official site, where they are asked to enter data that will end up in the hands of fraudsters (Harrison et al., 2016). Social engineering methods include fearmongering, pressure tactics, and appealing to human greed and the desire to get rich quickly (Kenyeres & Szűts, 2025). The latter is exploited by scammers advertising fake sweepstakes. However, in order to obtain the nonexistent valuable prize, the user must first provide their personal data.

Online fake news and various types of disinformation and scams are present in both Romania and Hungary (Kenyeres & Weigand, 2023). According to the literature available on this subject in the Scopus database, Hungarian journalists believe that fake news and

disinformation campaigns are widespread in Hungary (Bajomi-Lázár & Horváth, 2025). Based on international literature, fake news is also prominent in Romania (Mustață et al., 2023), specifically in relation to Covid-19 (e.g., Radu, 2023; Schulte-Cloos & Anghel, 2024), in connection with natural disasters such as earthquakes (Mărcău et al., 2023), or the Russian–Ukrainian war (Natea, 2023; Vintilă et al., 2023). In addition to fake news, various forms of online electronic fraud, including financial fraud, have also appeared in Romania, exacerbated by the emergence of artificial intelligence (Losano, 2025), for example, through the spread of deepfake videos promoting fake financial investments. In Hungary, online financial fraud has become so widespread that the Hungarian National Bank is planning to overhaul the financial transfer system as a result (Szabó, 2025). In Romania and Hungary, research has shown that journalists are also being bribed to publish various fake news stories, which also affects the lives of businesses (Teichmann et al., 2024). The problem is therefore real in both countries, which is why it is particularly important for young people living here to be able to distinguish between real and false content in online media.

Defense against Fake News—The Role of Media Literacy

There are several strategies for reducing the impact of disinformation and fake news. One of the most important of these targets users by developing their media literacy. According to Potter, the most important function of media literacy is to help individuals protect themselves from the potentially negative effects of media content (Potter, 2010). One of the earliest written definitions of media literacy was provided by Aufderheide and Firestone, who defined it as "the ability of a citizen to access, analyze, and produce information for specific outcomes" (Aufderheide & Firestone, 1993). Since then, there have been several attempts to define media literacy precisely, the most important common point being that it encompasses the skills for the critical analysis of media content, as well as the background knowledge and attitudes necessary for their practical application. Most of these abilities refer to accessing media messages, critically analyzing and evaluating messages, and creating messages transmitted through the media (see Ashley et al., 2013; Hobbs & Frost, 2003; Vraga et al., 2015). In this study, media literacy is understood as the ability to critically analyze, evaluate, responsibly use, and produce media content from online and/or digital platforms, accompanied by knowledge and appropriate attitudes related to the functioning of the media system and society.

Several international studies have examined the impact of media literacy on young people's recognition of fake news and other scams. Few of these studies have been conducted

on an international comparative basis (e.g., Martzoukou et al., 2020; Fastrez et al., 2022), and most of them have revealed differences between countries (Chen et al., 2025; Michelot et al., 2022; Palau-Sampio et al., 2022; Pérez-Escoda et al., 2024; García-Ruiz et al., 2020). In Romania and Hungary, research on the recognition of fake news is limited. In the literature available in the Scopus database, we found that research by Faragó et al. in Hungary showed that higher-level analytical thinking and belonging to the ethnic majority reduce susceptibility to fake news (Faragó et al., 2024). At the same time, susceptibility to conspiracy theories increases the likelihood of believing fake news (Szebeni et al., 2023). Research conducted by Schulte-Cloos and Anghel in Hungary and Romania found that the tendency to spread fake news increases when individuals must make quick, impulsive decisions (Schulte-Cloos & Anghel, 2024). In their Romanian study, Corbu et al. found that an individual's level of education did not significantly affect recognition of viral fake news (Corbu et al., 2020). Dumitru's research showed that, for the most part, neither children nor adolescents consider the reliability of information appearing on social media. (Dumitru, 2020).

The previous studies we reviewed examined some dimension of media literacy through self-reporting or specifically measured recognition of fake news. These focused primarily on individual countries, with few studies comparing multiple countries and even fewer examining different countries with populations that speak the same language (e.g., Michelot et al., 2022; Palau-Sampio et al., 2022). In the case of Romania and Hungary, there is a lack of research that tests, in practice, the media awareness of young Hungarians living in both countries. Our research is novel in that it simultaneously assessed the ability to recognize fake news, phishing scams, and fake sweepstakes in practice among young Hungarians in two neighboring counties on opposite sides of the Romanian–Hungarian border: among young Hungarians living in Hajdú-Bihar County in Hungary and Bihor County in Romania (in the historical Partium region). We were curious to find out what differences and similarities could be found between the critical media literacy of Hungarian youth living on both sides of the border and speaking the same native language in terms of identifying fake news and real news, phishing attempts, and fake and real sweepstakes.

Research Questions and Hypotheses

Our first research question concerned differences between countries:

> R.Q.1. Does the media literacy of Hungarian students differ between the Romanian and Hungarian sides of the border?

Previous studies have shown differences between countries in several dimensions of young people's media literacy (Pérez-Escoda et al., 2024; Palau-Sampio et al., 2022; Michelot et al., 2022). Based on this, our hypothesis is as follows:

> H.1. The media literacy skills of the young people participating in our research in recognizing fake news and attempts at deception show different results from country to country.

During the research, we also asked the students about their gender, and we examined the following research question in this regard:

> R.Q.2. Does the relationship between gender and media literacy differ between countries?

Some previous similar studies have shown differences between genders in terms of young people's media literacy (Yesmin, 2024; Jones & Procter, 2023; Cerdà-Navarro et al., 2021). Based on this, our hypotheses are as follows:

> H.2.a. The gender of respondents in both countries will affect media literacy test scores: media literacy is higher among women.
>
> H.2.b. We see the same pattern in both countries.

During our research, we also explored the type of residence of the students (small town, big city), so our research question in this regard is as follows:

> R.Q.3. Does the relationship between settlement type and media literacy differ between countries?

Previous international studies have revealed differences in the relationship between media awareness among urban and rural youth (Kurniawan et al., 2020; Tamam et al., 2021; Uddin et al., 2023; Gupta et al., 2023). Based on this, our hypothesis is as follows:

> H.3.a. The size of the settlement positively affects media literacy.
>
> H.3.b. We see the same pattern in both countries.

In our research, we also asked young people about their subjective financial situation. In this regard, our research question is as follows:

> R.Q.4. Does the relationship between perceived financial status and media literacy differ between countries?

Previous studies have found that better financial status is associated with higher media literacy among young people (Montiel Torres et al., 2025; Wong et al., 2025) and adults (Arin et al., 2023; Gogus et al., 2024), so we assume that:

H.4.a. A higher perceived financial status will have a positive effect on media literacy.

H.4.b. We see the same pattern in both countries.

Since we also assessed the age of the students, we will examine the following research question in this regard:

R.Q.5. Does the relationship between age and media literacy differ between countries?

Previous research has revealed differences in media awareness between younger and older age groups among students (Martzoukou et al., 2020; Cerdà-Navarro et al., 2021; Pérez-Escoda et al., 2024), so our hypothesis is:

H.5.a. Media literacy is higher among older students.

H.5.b. We see the same pattern in both countries.

Research Objectives and Methods

The aim of this research is to compare the media literacy of Hungarian young people living on both sides of the Romanian–Hungarian border (Hajdú-Bihar County in Hungary and Partium (Romania, Bihor County) on their ability to recognize fake news/real news, fake/real sweepstakes, and phishing attempts, as well as to examine how sociodemographic background variables affect this ability and whether their impact differs between countries.

We used a quantitative questionnaire-based research design for this study. Data collection was conducted via an online questionnaire (Google Forms). Sampling was conducted online from September 1, 2023, to February 23, 2024, using a self-completion method. The research was conducted as part of the international Erasmus+ project "Media Detective for Young People" with the participation of the "Hajdúsági Hallgatókért és Civilekért Egyesület" — Association for Students and Civilians in Hajdúság (HU), the "Partiumi Hallgatókért és Ifjúságért Egyesület" — Association for Youth and Students in Partium (RO), and TANDEM n.o. (SK). The 20-question online fake news test was completed in Hungarian by young people in Hungary, Romania (specifically in Partium), and Slovakia during school lessons. The test was given to teachers and youth workers, who used a QR code to share the test link with young people during school lessons.

Completing the test was voluntary, and respondents gave their prior informed consent, which they confirmed by signing attendance sheets. The data was stored in a secure database accessible only by the research team.

Sample

The present analysis is based on only part of the collected data—the Hungarian (N = 618) and Romanian (N = 575) samples. Table 1 shows the distribution of the demographic and background variables of the participating students. The gender distribution was balanced in both countries. However, there were significant differences in settlement type: the Hungarian sample was more urban, while the Romanian sample consisted mainly of rural students. The subjective financial situation was considered to be moderate in both countries. The average age was lower in the Romanian sample than in the Hungarian sample.

Table 1

Variables and their frequency of occurrence

Variable name		**Hungary (N = 618)**	**Romania (N = 575)**
Gender			
Male		280 (45.3%)	276 (48.0%)
Female		338 (54.7%)	299 (52.0%)
Residence			
Village		93 (15.0%)	275 (47.8%)
Small town		295 (47.7%)	231 (40.2%)
Big city		230 (37.2%)	69 (12.0%)
Subjective sense of wealth			
Low		33 (5.3%)	43 (7.5%)
Medium		393 (63.6%)	425 (73.9%)
High		192 (31.1%)	107 (18.6%)
Age (years)	Average (Standard deviation)	16.9 (1.9)	13.9 (1.8)

Note. Values within categories show the number and percentage of participants; age is shown as an average (standard deviation).

Measurement Methods and Variables

In addition to personal variables collected from participants (country, gender, age, place of residence, subjective sense of wealth), we measured fundamental, practical skills in analyzing and critically evaluating media messages within media literacy in relation to fake news, phishing scams, and fake sweepstakes, using a self-developed measurement tool (fake news recognition test) that we compiled based on tests used in previous similar studies (Porshnev & Miltsov, 2020; Jones-Jang et al., 2021; Al-Zou'bi, 2021; Orhan, 2023).

The fake news recognition quiz consisted of 20 dichotomous items. Across the entire sample, the scale's internal reliability was moderate (Cronbach's α = 0.634). In Hungary, the reliability was acceptable (α = 0.704), whereas in Romania it was low (α = 0.368). This suggests that the quiz measures a homogeneous construct to varying degrees in different cultural contexts.

All 20 items in the test are real screenshots that either contain verified real information or verified false information/fraud. The tool's elements were reviewed by media and communication researchers and police experts, and a pilot test was conducted in July 2023 with a sample of 424 people of mixed ages. Based on the experience and feedback gathered there, we developed the final measurement tool. The 20 items are divided into three topics: fake and real prize games (5 items), phishing attempts and real, official messages (10 items), and fake news and real news (5 items). A correct answer was worth 1 point, and a wrong answer was worth 0 points.

The study's target variable was the score on the fake news recognition test (SCORE). On a scale of 0–20, Hungarian students scored an average of 12.6 (SD = 3.2), while Romanian Hungarian students scored an average of 11.0 (SD = 3.0). Our results, therefore, suggest that Hungarian students in Hungary perform better than Hungarians living in Partium.

The independent variables in the study were as follows: country (Hungary, Romania), gender (male/female), age (continuous), type of place of residence (village, small town, large city[1]), and subjective sense of wealth (low, medium, high[2]). The categorical variables were dummy-coded, with "Romania" for country and "female" for gender, and the lowest-level category was used as the reference in all other cases.

[1] The original categories were merged (the categories "county seat" and "capital city" were merged to form the category "big city").

[2] The original categories were merged (the "well below average" and "below average" categories were merged to form the "low" category, and the "above average" and "well above average" categories were merged to form the "high" category).

Procedure

We used linear regression for the analysis and built the model in hierarchical steps. In model 1, we considered the main effects (country, gender, age, settlement type, wealth). In model 2, we examined differences in the effect of gender across countries, including the country × gender interaction. In step 3, we analyzed the differences in the effect of settlement type by country, including country × settlement type interactions, and in model 4, we included country × age interactions to examine the combined effect of student age and country, and then, in addition to the above, we also included wealth × country interactions, so that the model 5 included all possible two-way interactions between country and background variables.

The regression conditions were checked using diagnostic procedures (Appendices 1–3). The distribution of the residuals showed acceptable normality, and no heteroscedasticity occurred.

Overall, multicollinearity did not pose a serious problem in the first four models. However, in the fifth model, the interpretation of interactions must be treated with caution due to the high VIF values. The analyses were performed using SPSS 30.0 (SPSS Inc., Chicago, IL, USA) and Microsoft Excel.

Results

The results of the hierarchical linear regression models (Table 2) showed that Hungarian respondents in Hungary scored significantly higher on the quiz than Hungarian respondents from Romania (B = 1.12–3.10, $p < .001$). This difference persisted in all models and proved to be the strongest determinant in the country. The main effect of gender was significant in the initial model (e.g., B = 0.94, $p < .001$), indicating that men scored higher than women on average. However, this effect gradually weakened in the expanded models. It remained only marginally significant in the final model (B = 0.50, $p = .051$), suggesting that the effect of gender can be interpreted in interaction with country. Indeed, the interaction term was significant (B = 0.80, $p = .025$), indicating that the male–female difference was more substantial in Hungary than in Romania (Figure 1).

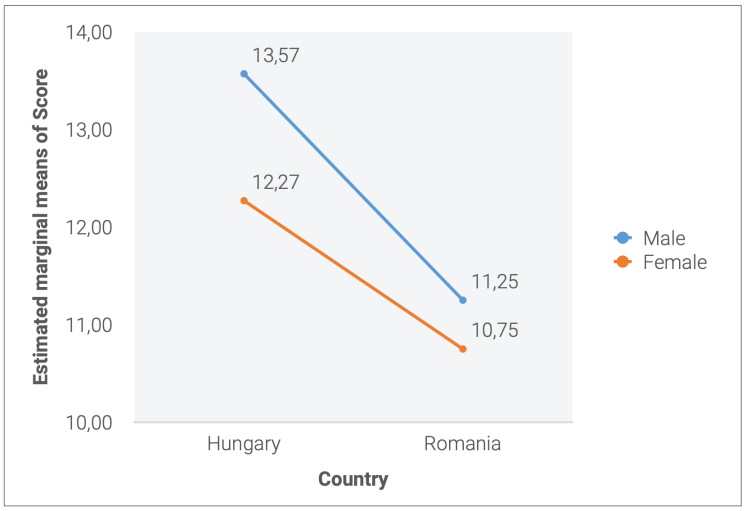


Figure 1
Country × gender interaction

The main effect of settlement type was initially not significant, but in a later model, those living in big cities achieved significantly higher scores than those living in villages (B = 1.29, p = .002). At the same time, the country × big city interaction was negative and significant (B = –1.83, p = .001), suggesting that while living in a big city is advantageous for Romanian Hungarian students, this effect does not occur in Hungary and, in fact, comes with a relative disadvantage. A similar pattern was observed in small towns (B = –1.45, p = .001) (Figure 2).

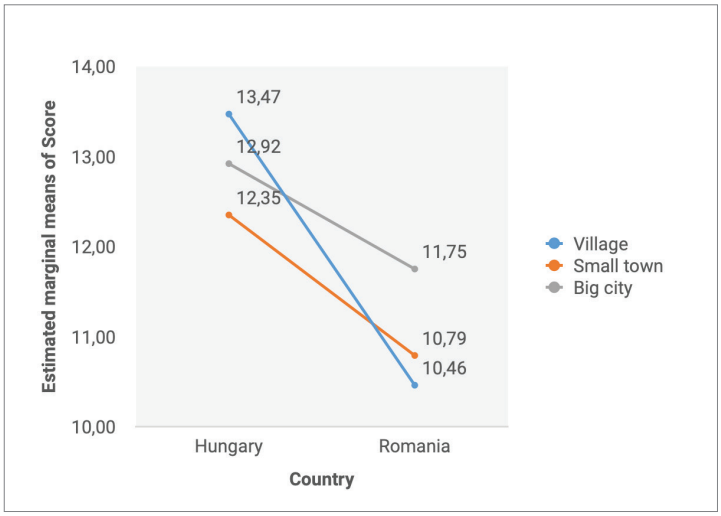


Figure 2
Country × residence interaction

Financial status did not prove to be a significant factor in most cases, although moderate wealth showed a positive correlation in one model (B = 0.98, p = .045). However, the interaction effects were not significant, meaning that financial status alone did not explain the differences in scores.

Age was not a significant predictor either as a main effect or in interaction, meaning that age differences did not influence performance.

Table 2

Results of hierarchical linear regression for the dependent variable SCORE (N = 1193)

Variable	Model 1 B (SE)	Model 2 B (SE)	Model 3 B (SE)	Model 4 B (SE)	Model 5 B (SE)
Constant	10.06 (0.39)***	10.26 (0.40)***	9.93 (0.40)***	10.00 (0.42)***	9.63 (0.52)***
Hungary (ref = Romania)	1.54 (0.25)***	1.12 (0.30)***	2.27 (0.44)***	2.28 (0.44)***	3.10 (0.81)***
Male (ref = Female)	0.94 (0.18)***	0.51 (0.26)*	0.47 (0.26)†	0.47 (0.26)†	0.50 (0.26)†
Age (z-standardized)	−0.05 (0.12)	−0.04 (0.12)	−0.06 (0.12)	0.02 (0.17)	0.00 (0.17)
Small town (ref = village)	−0.15 (0.22)	−0.14 (0.22)	0.33 (0.27)	0.34 (0.27)	0.34 (0.27)
Big city (ref = village)	0.48 (0.26)†	0.49 (0.26)†	1.30 (0.41)**	1.30 (0.41)**	1.29 (0.41)**
Medium wealth (ref = low)	0.51 (0.37)	0.52 (0.37)	0.58 (0.37)	0.55 (0.37)	0.98 (0.49)*
High wealth (ref = low)	0.54 (0.40)	0.55 (0.40)	0.63 (0.40)	0.61 (0.40)	0.76 (0.55)
Hungary × Gender	—	0.84 (0.36)*	0.86 (0.35)*	0.85 (0.36)*	0.80 (0.36)*
Hungary × Small town	—	—	−1.46 (0.45)**	−1.49 (0.46)**	−1.45 (0.46)**
Hungary × Big city	—	—	−1.82 (0.56)**	−1.85 (0.56)**	−1.83 (0.56)**

Variable	Model 1 B (SE)	Model 2 B (SE)	Model 3 B (SE)	Model 4 B (SE)	Model 5 B (SE)
Hungary × Age	—	—	—	−0.15 (0.24)	−0.14 (0.24)
Hungary × Medium wealth	—	—	—	—	−0.97 (0.74)
Hungary × High wealth	—	—	—	—	−0.50 (0.81)
R^2	.092	.096	.106	.107	.108
ΔR^2	—	.004*	.010**	.000	.002
F	17.05***	16.19***	14.01***	12.90***	11.70***

Note. † p < .10, * p < .05, ** p < .01, *** p < .001

Discussion and implications

According to our results, young Hungarians in Hungary scored significantly higher on the fake news test than their Hungarian peers in Partium. This confirmed our first hypothesis, and our results reinforced previous international media literacy studies that showed differences in media literacy among young people across countries (Pérez-Escoda et al., 2024; Palau-Sampio et al., 2022; Michelot et al., 2022). One reason for this may be the ethnic minority status of Hungarians in Partium, in connection with which Faragó showed that belonging to the ethnic majority reduces susceptibility to fake news (Faragó et al., 2024), while a Danish study concluded that developing the literacy skills of ethnic minorities can be a challenge for mainstream formal education (Drotner & Kobbernagel, 2014). Thus, the specific characteristics of digital information literacy education in each country may also play a role (Merga & Mat Roni, 2025). However, according to Corbu et al., an individual's level of education does not significantly affect the recognition of viral fake news (Corbu et al., 2020). At the same time, test bias may also be an important factor, as we used the same test in both countries, which primarily contains examples from Hungary. Thus, certain platforms may be unfamiliar to a Hungarian living in Romania, making it difficult to assess the credibility of information originating from or appearing to originate from there. This is in line with the findings of Palau-Sampio et al. (2022),

who argue that the geographical proximity of students to the information is also important in identifying disinformation (Palau-Sampio et al., 2022). Age differences may also have an impact, as the Partium sample included younger people who may not necessarily have the same knowledge and experience as their older peers, so their media literacy may be weaker, as has been shown among high school students (Turpo-Gebera et al., 2023) and university students (Cerdà-Navarro et al., 2021).

We rejected hypothesis H.2.a. because men performed better, which contradicts the results of several previous studies among high school students (Jones & Procter, 2023; Turpo-Gebera et al., 2023; Tamam et al., 2021; Çelik et al., 2022). However, our results confirmed better performance among men in the university-age group (Cerdà-Navarro et al., 2021; Uddin et al., 2021). On the other hand, we also found differences between countries, as the difference between men and women was more pronounced among young people in Hungary, so our hypothesis H.2.b. was not confirmed either. The difference between countries can be explained by the younger age of the Romanian Hungarians in our sample, as previous research has shown that women in the youngest age group and men in slightly older age groups showed stronger media literacy skills. Hence, the disadvantage for women was more minor among younger Hungarians in Partium.

We did not confirm hypothesis H.3.b., because we observed different patterns in the two countries. While living in a large city was associated with better test results among Hungarian students in Partium, this effect did not occur in Hungary; in fact, it was associated with a relative disadvantage compared to villages. Thus, our hypothesis H.3.a. was only confirmed in the case of Hungarians in Partium, supporting previous research which found that urban youth have higher media literacy and critical thinking skills than their rural counterparts (Gupta et al., 2023; Uddin et al., 2023; Kurniawan et al., 2020). The Hungarian results show a pattern along settlement type that contradicts not only the above studies, but also those that showed higher critical literacy among rural students compared to those in large cities (Çelik et al., 2022; Tamam et al., 2021). The unusual pattern in Hungary may stem from the fact that the sample included younger students from large cities, who scored slightly lower on the test than older students from rural areas.

The subjective financial situation of young people did not have a significant impact on test scores in either country, so our hypotheses H.4.a., H.4.b., nor did hypotheses H.5.a. and H.5.b., as the age of the students did not prove to be a significant predictor in either country.

Our findings can serve as an important lesson for decision-makers, teachers, education professionals, and youth workers in both countries. They highlight the shortcomings

in the media literacy of Hungarian youth living in both countries, especially in the case of Hungarian students in Partium. With these results in hand, it is possible to plan targeted media literacy interventions. In the case of Partium, based on our results, it would be critical to reduce social inequalities between rural and urban areas, as these can also manifest themselves in access to education (Chávez-Fernández et al., 2025), thus, it is crucial to develop critical literacy in rural areas, to provide inclusive and context-sensitive media awareness training (Mazahir & Yaseen, 2025), and to reduce infrastructural inequalities between urban and rural areas (Prakash, 2025). Our findings can also be instructive for policymakers in both countries in developing targeted, personalized education policy interventions, and for individual educational institutions in optimizing their curricula to address young people's media literacy gaps.

Limitations and Future Research Directions

Although the present study was based on a large sample, several limitations must be considered when interpreting the results.

Limitations of sampling: sampling was convenience-based, using the school network of civil society organizations participating in the Media Detective for Youth project. This may have resulted in several limitations. First, the sample is not representative of the entire Hungarian student population in the given border counties (Hajdú-Bihar County in Hungary and Bihor County in Romania). Although the sample size was large (N = 1193), the distributions of settlement and school types across countries differed, which may have influenced the results. For example, the Hungarian sample included a higher proportion of students from large cities, whereas students from villages and small towns were overrepresented in the Romanian samples. However, during the analyses, we controlled all significant background variables (age, gender, settlement type, school, subjective financial situation). Hence, the differences between countries are not solely due to these patterns. Nevertheless, the results are indicative as a cross-country comparison and require cautious interpretation. The data are cross-sectional and therefore do not allow causal conclusions. Although the regression models reveal correlations, it cannot be ruled out that other background factors (e.g., family background, parents' education, access to media) mediate or modify the effects found. Interpreting differences across countries is complicated by the study's lack of detailed data on media and digital competence development practices in education systems. Based on the results, it can be assumed that the educational and cultural environment significantly influences fake news recognition, but the exact mechanisms remain to be further researched. Limitations of the fake news

recognition test: the tool only examined a limited dimension of critical media awareness (the ability to analyze and critically evaluate media messages in relation to fake news, phishing scams, and fake sweepstakes). Other related skills (e.g., source criticism, online information verification, and algorithm awareness) were not measured, so the results can only be applied to certain types of scams. A further limitation of the test is that users can only rely on the information shown in the screenshot; they cannot click the articles shown, search for information from external sources, read comments, etc. Furthermore, although the actual email addresses and URLs are included in the screenshot for masked sender email addresses, participants do not necessarily know they should pay attention to them or what they mean. The results across countries may be distorted by the fact that only news from Hungarian websites and messages primarily from Hungarian service providers are included, which may reduce recognition effectiveness among Hungarians in Romania. In the case of young people in Hungary, however, the familiar topics, public figures, service providers, and financial institutions included in the tasks may increase the proportion of correct answers among them.

In future research, it would be worthwhile to use longitudinal data to examine how media awareness changes as students grow older and the roles of parents, teachers, and peer groups in the development of critical thinking. An important area of research could be to explore gender differences in greater depth and to examine the relationship between religiosity and the educational environment. In addition, it would be helpful to supplement the quantitative results with qualitative methods (e.g., interviews and focus groups) to understand the underlying mechanisms better. It would also be important to extend the research to include fake content generated by artificial intelligence (e.g., images and deepfake videos). By supplementing the test tasks with a self-reported questionnaire, it would also be possible to explore the differences between perceived and actual knowledge. Another interesting area of research could be to explore the differences in media literacy between Hungarian and Romanian youth in Romania by compiling a personalized test that still allows for comparison. Another interesting research topic could be to compare students' performance across schools with the educational guidelines in place at each school.

References

Aïmeur, E., Amri, S., & Brassard, G. (2023). Fake news, disinformation and misinformation in social media: A review. *Social Network Analysis and Mining, 13*(1), Article 30. https://doi.org/10.1007/s13278-023-01028-5

Al-Zou'bi, R. (2021). The impact of media and information literacy on acquiring the critical thinking skill by the educational faculty's students. *Thinking Skills and Creativity, 39*, Article 100782. https://doi.org/10.1016/j.tsc.2020.100782

Allcott, H., & Gentzkow, M. (2017). Social media and fake news in the 2016 election. *Journal of Economic Perspectives, 31*(2), 211–236. https://doi.org/10.1257/jep.31.2.211

Anandpara, V., Dingman, A., Jakobsson, M., Liu, D., & Roinestad, H. (2007). Phishing IQ tests measure fear, not ability. In D. Sven & D. Rachna (Eds.), *Financial cryptography and data security* (pp. 362–366). Springer. https://doi.org/10.1007/978-3-540-77366-5_33

Arin, K. P., Mazrekaj, D., & Thum, M. (2023). Ability of detecting and willingness to share fake news. *Scientific Reports, 13*, Article 34402. https://doi.org/10.1038/s41598-023-34402-6

Ashley, S., Maksl, A., & Craft, S. (2013). Developing a news media literacy scale. *Journalism & Mass Communication Educator, 68*(1), 7–21. https://doi.org/10.1177/1077695812469802

Aufderheide, P., & Firestone, C. M. (1993). *Media literacy: A report of the national leadership conference on media literacy*. The Aspen Institute Communications and Society. https://files.eric.ed.gov/fulltext/ED365294.pdf

Bajomi-Lázár, P., & Horváth, K. (2025). Two journalistic cultures in one country: The case of Hungary in the light of journalists' discourses on fake news. *Journalism Practice, 19*(5), 1055–1073. https://doi.org/10.1080/17512786.2023.2223173

Bodaghi, A., Schmitt, K. A., Watine, P., & Fung, B. C. M. (2024). A literature review on detecting, verifying, and mitigating online misinformation. *IEEE Transactions on Computational Social Systems, 11*(4), 5119–5145. https://doi.org/10.1109/TCSS.2023.3289031

Butavicius, M., Taib, R., & Han, S. J. (2022). Why people keep falling for phishing scams: The effects of time pressure and deception cues on the detection of phishing emails. *Computers & Security, 123*, Article 102937. https://doi.org/10.1016/j.cose.2022.102937

Çelik İ. T., Çerkez, Y., & İskifoğlu, G. (2022). Thinking culture and critical thinking dispositions of high school students in Turkish Republic of Northern Cyprus. *Frontiers in Psychology, 13*, Article 1017747. https://doi.org/10.3389/fpsyg.2022.1017747

Cerdà-Navarro, A., Abril-Hervás, D., Mut-Amengual, B., & Comas-Forgas, R. (2021). Fake or not fake, that is the question: Disinformation recognition among university students. *Prisma Social, 34*, 298–320. https://revistaprismasocial.es/article/view/4328

Chávez-Fernández, J., Rodríguez-Barboza, R., López-Luján, S., & Flores, O. D. C. (2025). Critical reading as a tool for citizenship education: A review from the Peruvian context. *Teoría Social y Pensamiento Crítico, 24*, 146–155. https://zenodo.org/records/15384503

Chen, S., Salleh, S. M., & Salleh, M. A. M. (2025). Media and information literacy among pre-service teachers: A systematic review of key trends and gaps (2013–2024). *International Journal of Information Management Data Insights, 5*(2), Article 100348. https://doi.org/10.1016/j.jjimei.2025.100348

Corbu, N., Bârgăoanu, A., Buturoiu, R., & Ștefăniță, O. (2020). Does fake news lead to more engaging effects on social media? Evidence from Romania. *Communications, 45*(1), 694–717. https://doi.org/10.1515/commun-2019-0152

Drotner, K., & Kobbernagel, Ch. (2014). Toppling hierarchies? Media and information literacies, ethnicity, and performative media practices. *Learning, Media & Technology, 39*(4), 409–428. https://doi.org/10.1080/17439884.2014.964255

Faragó, L., Orosz, G., Paskuj, B., & Krekó, P. (2024). Analytic adolescents prevail over fake news — A large-scale preregistered study. *Personality and Individual Differences, 229*, Article 112747. https://doi.org/10.1016/j.paid.2024.112747

Fastrez, P., Sutter Widmer, D., Bihl, J., Lacelle, N., & Gladu, E. (2022). Assessing media and information literacy: Teenagers' practices and competence in information search and multimedia creation. In *European conference on information literacy* (pp. 477–489). Springer International Publishing. https://doi.org/10.1007/978-3-030-99885-1_40

García-Ruiz, R., da Mota Matos, A. P., Arenas-Fernández, A., & Ugalde, C. (2020). Media literacy in primary education: International perspective of level of literacy competence. *Pixel Bit Revista de Medios y Educacion, 58*, 217–236. https://doi.org/10.12795/pixelbit.74535

Gogus, A., Geçkin-Onat, S., & Yücel, S. (2024). General approaches of adults on new media literacy: A national survey study. *Education and Information Technologies, 29*(8), 9747–9767. https://doi.org/10.1007/s10639-023-12205-6

Gupta, S., Sharma, D., & Thakur, R. A. (2023). Exploring factors affecting media information literacy: A mediation analysis. *DESIDOC Journal of Library and Information Technology, 43*(2), 78–87. https://doi.org/10.14429/djlit.43.02.18608

Harrison, B., Svetieva, E., & Vishwanath, A. (2016). Individual processing of phishing emails. *Online Information Review, 40*(2), 265–281. https://doi.org/10.1108/OIR-04-2015-0106

Hobbs, R., & Frost, R. (2003). Measuring the acquisition of media-literacy skills. *Reading Research Quarterly, 38*(3), 330–355. https://doi.org/10.1598/RRQ.38.3.2

Jackson, C., Simon, D. R., Tan, D. S., & Barth, A. (2007). An evaluation of extended validation and picture-in-picture phishing attacks. In D. Sven & D. Rachna (Eds.), *International conference on financial cryptography and data security* (pp. 281–293). Springer. https://doi.org/10.1007/978-3-540-77366-5_27

Jones-Jang, S. M., Mortensen, T., & Liu, J. (2021). Does media literacy help identification of fake news? Information literacy helps, but other literacies don't. *American Behavioral Scientist, 65*(2), 371–388. https://doi.org/10.1177/0002764219869406

Jones, S.-L., & Procter, R. (2023). Young peoples' perceptions of digital, media and information literacies across Europe: Gender differences, and the gaps between attitudes and abilities. *Technology Pedagogy and Education, 32*(4), 435–456. https://doi.org/10.1080/1475939X.2023.2210152

Kenyeres, A. Z., & Szűts, Z. (2024). Az álhírek (fake news) definíciós kísérletei és nyelvi jelei [Fake news: Attempts to define it and its linguistic signs]. *Magyar Nyelvőr, 148*(2), 203–235. https://doi.org/10.38143/Nyr.2024.2.203

Kenyeres, A. Z., & Szűts, Z. (2025). Az adathalászat (phishing) fogalmi definiálása és főbb nyelvi jelei [Phishing: Definitions and linguistic signs]. *Magyar Nyelvőr, 149*(2), 159–185. https://doi.org/10.38143/Nyr.2025.2.159

Kenyeres, A. Z., & Weigand, L. (2023). From provoking emotions to fake images: The recurring signs of fake news and phishing scams spreading on social media in Hungary, Romania and Slovakia. In A. Andreatos & Ch. Douligeris (Eds.), *European conference on cyber warfare and security* (Vol. 22, No. 1, pp. 726–732). https://doi.org/10.34190/eccws.22.1.1547

Krekó, P. (2018). *Tömegparanoia: Az összeesküvés-elméletek és álhírek szociálpszichológiája* [Mass-paranoia: The social psychology of conspiracy theories and fake news]. Athenaeum Kiadó.

Kurniawan, D. A., Perdana, R., & Ikhlas, M. (2020). Do a science process skills affect on critical thinking in science? Differences in urban and rural. *International Journal of Evaluation and Research in Education, 9*(4), 874–880. https://doi.org/10.11591/ijere.v9i4.20687

Losano, M. G. (2025). The constitutional courts of Romania and Colombia on cyber interference and artificial intelligence. *Diritto Pubblico Comparato Ed Europeo, 27*(1), 117–138. https://www.rivisteweb.it/doi/10.17394/116459

Mărcău, F. C., Peptan, C., Băleanu, V. D., Iana, S. A., & Gheorman, V. (2023). Analysis regarding the impact of 'fake news' on the quality of life of the population in a region affected by earthquake activity: The case of Romania–Northern Oltenia. *Frontiers in Public Health, 11*, Article 1244564. https://doi.org/10.3389/fpubh.2023.1244564

Martzoukou, K., Fulton, C., Kostagiolas, P., & Lavranos, C. (2020). A study of higher education students' self-perceived digital competences for learning and everyday life online participation. *Journal of Documentation, 76*(6), 1413–1458. https://doi.org/10.1108/JD-03-2020-0041

Mazahir, I., & Yaseen, S. (2025). Media literacy in the age of misinformation: A mixed-methods analysis of adult media literacy across urban and rural areas of Pakistan. *International Journal of Media and Information Literacy, 10*(1), 40–46. https://doi.org/10.13187/ijmil.2025.1.40

Merga, M. K., & Mat Roni, S. (2025). "An uphill battle": School library professionals fostering student reading engagement. *English in Education, 59*(1), 17–36. https://doi.org/10.1080/04250494.2025.2456718

Michelot, F., Béland, S., & Poellhuber, B. (2022). A transnational comparative study of preservice teachers' critical thinking skills and metaliteracy self-efficacy. *Higher Education, Skills and Work-Based Learning, 12*(5), 866–883. https://doi.org/10.1108/HESWBL-10-2021-0191

Montiél Torres, M. F., Teruel Rodrígez, L., García-Faroldi, L., & Martín-Martín, F. M. (2025). Vulnerable groups and disinformation: An analysis of the Andalusian reality. *Doxa Comunicación, 41*, 369–393. https://doi.org/10.31921/doxacom.n41a2902

Mustață, M.-A., Răpan, I., Dumitrescu, L., Dobreva, H., Dimov, P., Lis, A., Révayová, E., Marineanu, V., Buluc, R., Olariu, C., Lucinescu, A., & Buță, C. (2023). Assessing the truthfulness of security and defence news in Central and Eastern Europe: The role of cognitive style and the promise of epistemic sophistication. *Applied Cognitive Psychology, 37*(6), 1384–1396. https://doi.org/10.1002/acp.4130

Orhan, A. (2023). Fake news detection on social media: The predictive role of university students' critical thinking dispositions and new media literacy. *Smart Learning Environments, 10*(1), Article 29. https://doi.org/10.1186/s40561-023-00248-8

Palau-Sampio, D., Carratalá, A., Tarullo, R., & Crisóstomo, P. (2022). Quality recognition as a prescriber against disinformation. *Comunicar, 30*(72), 59–69. https://doi.org/10.3916/C72-2022-05

Parsons, K., Butavicius, M., Pattinson, M., McCormac, A., Calic, D., & Jerram, C. (2016). *Do users focus on the correct cues to differentiate between phishing and genuine emails?* arXiv. https://arxiv.org/pdf/1605.04717

Parsons, K., McCormac, A., Pattinson, M., Butavicius, M., & Jerram, C. (2013). Phishing for the truth: A scenario-based experiment of users' behavioural response to emails. In L. J. Janczewski, H. B. Wolfe, & S. Shenoi (Eds.), *Security and privacy protection in information processing systems* (pp. 366–378). Springer. https://doi.org/10.1007/978-3-642-39218-4_27

Pérez-Escoda, A., Barrios-Rubio, A., Pedrero-Esteban, L. M., & Ávalos, C. (2024). Taking on social media as new gatekeepers among young people: A call upon digital literacy. *Information, 15*(4), Article 180. https://doi.org/10.3390/info15040180

Porshnev, A., & Miltsov, A. (2020). The effects of thinking styles and news domain on fake news recognition by social media users: Evidence from Russia. In *International conference on human–computer interaction* (pp. 305–320). Springer International Publishing. https://doi.org/10.1007/978-3-030-49570-1_21

Potter, W. J. (2010). The state of media literacy. *Journal of Broadcasting & Electronic Media, 54*(4), 675–696. https://doi.org/10.1080/08838151.2011.521462

Prakash, O. (2025). Is it time for India to set social media age limits for adolescents? *Indian Journal of Psychiatry, 67*(2), 267–273. https://doi.org/10.4103/indianjpsychiatry.indianjpsychiatry_1012_24

Radu, B. V. (2023). A policy perspective on regulating disinformation in Romania during the Covid-19 pandemic. *NISPAcee Journal of Public Administration and Policy, 16*(1), 108–137. https://doi.org/10.2478/nispa-2023-0005

Rosu, M-M., Cosmoiu, A-M., Ianole-Calin, R., & Cornoiu, S. (2024). Stories worth sharing — Why do people spread news online? *Online Information Review, 48*(3), 581–600. https://doi.org/10.1108/OIR-12-2022-0693

Schulte-Cloos, J., & Anghel, V. (2024). Right-wing authoritarian attitudes, fast-paced decision-making, and the spread of misinformation about COVID-19 vaccines. *Political Communication, 41*(4), 608–626. https://doi.org/10.1080/10584609.2023.2291538

Szabó, Gy. (2025, June 3). *Eddig tűrt a Magyar Nemzeti Bank, megváltoztatják a banki utalások rendszerét a csalások miatt* [The National Bank has put up with it until now, it will change the bank transfer system because of the scams]. Index. https://index.hu/gazdasag/2025/06/03/jegybank-mnb-felugyelet-csalassorozat-banki-utalas-kiberbunozes-varga-mihaly-bejelentes/

Szebeni, Z., Jasinskaja-Lahti, I., Lönnqvist, J.-E., & Szabó, Zs. P. (2023). The price of (dis)trust — Profiling believers of (dis)information in the Hungarian context. *Social Influence, 18*(1), Article 2279662. https://doi.org/10.1080/15534510.2023.2279662

Tamam, B., Corebima, A. D., Zubaidah, S., & Suarsini, E. (2021). An investigation of rural–urban students' critical thinking in biology across gender. *Pedagogika, 142*(2), 200–217. https://doi.org/10.15823/p.2021.142.11

Teichmann, F., Boticiu, S. R., & Sergi, B. S. (2024). International management amid fake news and corruption. *Journal of Financial Crime, 30*(6), 1674–1691. https://doi.org/10.1108/JFC-05-2022-0110

Toma, C. L., & Hancock, J. T. (2012). What lies beneath: The linguistic traces of deception in online dating profiles. *Journal of Communication, 62*(1), 78–97. https://doi.org/10.1111/j.1460-2466.2011.01619.x

Turpo Gebera, O., Zea-Urviola, M., Huamaní-Portilla, F., & Girón-Pizarro, M. (2023). Media and information literacy in secondary students: Diagnosis and assessment. *Journal of Technology and Science Education, 13*(2), 514–532. https://doi.org/10.3926/jotse.1746

Uddin, B., Reza, N., Islam, M. S., Ahsan, H., & Amin, M. R. (2021). Fighting against fake news during pandemic era: Does providing related news help student internet users to detect COVID-19 misinformation? In *Proceedings of the 13th ACM web science conference 2021* (pp. 178–186). https://doi.org/10.1145/3447535.3462508

Veszelszki, Á. (2017). Az álhírek extra- és intralingvális jellemzői [Extralinguistic and intralinguistic characteristics of fake news]. *Századvég, 84*, 51–82. https://www.researchgate.net/publication/318990136

Vintilă, M., Lăzărescu, G.-M., Kalaitzaki, A., Tudorel, O. I., & Goian, C. (2023). Fake news during the war in Ukraine: Coping strategies and fear of war in the general population of Romania and in aid workers. *Frontiers in Psychology, 14*, Article 1151794. https://doi.org/10.3389/fpsyg.2023.1151794

Vraga, E., Tully, M., Kotcher, J. E., Smithson, A. B., & Broeckelman-Post, M. (2015). A multi-dimensional approach to measuring news media literacy. *Journal of Media Literacy Education, 7*(3), 41–53. https://doi.org/10.23860/jmle-7-3-4

Walters, R. M. (2018). How to tell a fake: Fighting back against fake news on the front lines of social media. *Texas Review of Law & Politics, 23*(1), 111–179. https://heinonline.org/HOL/LandingPage?handle=hein.journals/trlp23&div=6&id=&page=

Wong, K. L. L., Chiu, M. M., Chan, K., Chong, K. M. E., Bhomwik, M., & Kryzwosz-Rynkiewicz, B. (2025). Media and information literacy's antecedents and consequences: A survey of Hong Kong University students. *Information Development*. Advance online publication. https://doi.org/10.1177/02666669251359962

Yang, R., Zheng, K., Wu, B., Li, D., Wang, Z., & Wang, X. (2022). Predicting user susceptibility to phishing based on multidimensional features. *Computational Intelligence and Neuroscience, 2022*, Article 7058972. https://doi.org/10.1155/2022/7058972

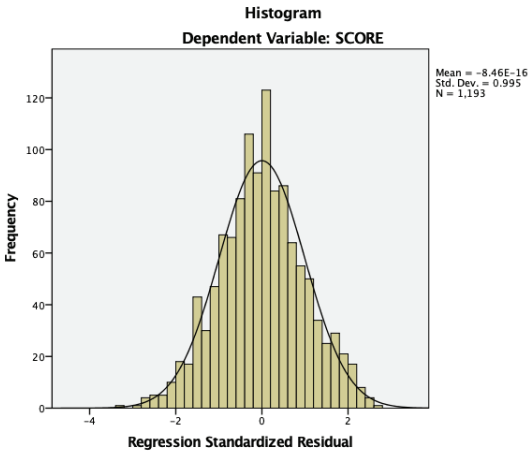
Yesmin, S. (2024). Misinformation, disinformation and malinformation and related issues: Experimental evidence of LIS students' recognition and capacity of dealing. *Science and Technology Libraries, 43*(2), 173–187. https://doi.org/10.1080/0194262X.2023.2238005

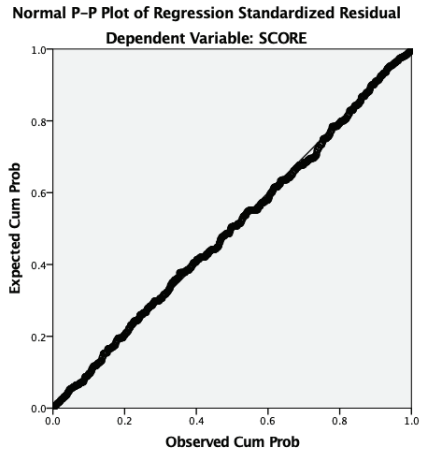
Zhou, L., Burgoon, J. K., Nunamaker, J. F., & Twitchell, D. (2004). Automating linguistics-based cues for detecting deception in text-based asynchronous computer-mediated communications. *Group Decision and Negotiation, 13*(1), 81–106. https://doi.org/10.1023/B:GRUP.0000011944.62889.6f

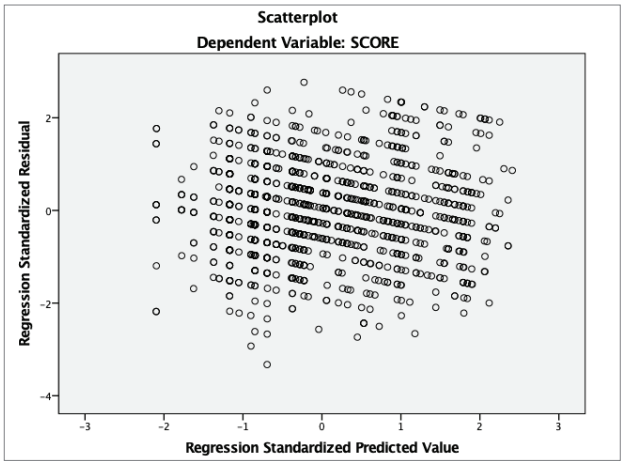
Appendix

Appendix 1

Diagnosis of normality







Appendix 2

Diagnosis of homoscedasticity

Appendix 3

Multicollinearity diagnostics (VIF values)

Variable	Model 1	Model 2	Model 3	Model 4	Model 5
Small town (ref=Village)	1.49	1.49	2.36	2.38	2.38
Big city (ref=Village)	1.64	1.64	4.10	4.10	4.11
Medium wealth (ref=Low)	3.71	3.71	3.73	3.77	6.68
High wealth (ref=Low)	3.78	3.78	3.80	3.85	7.42
Hungary × Gender	—	2.90	2.91	2.92	2.96
Hungary × Small town	—	—	4.93	4.99	5.01
Hungary × Big city	—	—	6.24	6.27	6.33
Hungary × Age	—	—	—	2.68	2.69
Hungary × Medium wealth	—	—	—	—	15.74
Hungary × High wealth	—	—	—	—	11.32