Do Greek University Students Trust Social Media Regarding Science Related Issues? The Covid-19 Case

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Abstract

This research aimed in revealing the trends of Greek universities' student population in terms of their trust in social media, focusing on information and news related to scientific issues, and particularly on issues related to Covid-19. The sample of our study consisted of 557 people studying in various faculties of Greek universities throughout the country. Their answers in a questionnaire were analyzed using both descriptive and inferential statistics. Students' answers revealed that despite they often resort to the use of social media and internet sources for informational purposes, they tend not to consider them as the most reliable source of obtaining information, regardless of the topic. They state that, contemplating the science and Covid-19 related information shared on social media platforms as unreliable and inaccurately presented, they try to cross-check it by drawing news from other media, a practice that contributes to them being able to distinguish fake news from true ones.

Keywords: social media, trust, Covid-19, science information, medical information, students' attitudes

1. Introduction

Nowadays, especially during the Covid-19 pandemic, a great issue arose concerning the scientific literacy of the population all over the world. Many people were standing skeptical that the virus still existed, showed no confidence in vaccines and developed various conspiracy theories about the origin of the virus. These phenomena could be explained due to the low levels of scientific literacy and due to the wide dissemination of various non-scientific theories through social media. The degree to which the population responds to these theories obviously depends on its level of scientific literacy and on the trust it shows in social media as a source of information. The results of our research can shed light on the issue of valid information on scientific issues and highlight the need to both strengthen scientific literacy and the need to develop and strengthen information literacy. Education should play a decisive role in this direction.

2. Literature Review

According to researchers, the impact of digitization, one of the main features of the modern era, has brought about significant changes in many aspects of life, which, in many cases and judging by its dynamics, leads to the conclusion that the world, as man knew it, is being reorganized (Kalogeropoulos, Rori, & Dimitrakopoulou, 2021). When shifting the discussion to the field of communications, it becomes clear that the new technologies which -relatively recently- have emerged, have changed the entire ecosystem of the media and the people who act within it (Kalogeropoulos et al., 2021). The number of people who use the internet on a daily basis to get information is constantly increasing, revealing many variations in their behavior regarding news consumption (De Keersmaecker & Roets, 2017).

Data derived from the Reuters Institute's annual surveys (Newman et al., 2021) reveal that in recent years there has been a constantly increasing tendency to obtain news electronically, from internet and social media sources, while there has been a simultaneous, gradual degradation of more traditional media, such as television and printed press. As measurements show, social networks are now the most widespread medium for news consumption, gaining even more attention than television (Newman et al., 2021). According to researchers, their specific characteristics, such as providing easy and fast access at a relatively low cost, and raising the possibility for users to share, comment and discuss the news with people they know as well as other users of the platform, contribute significantly to this attention-gaining (Shu, Silva, Wang, Tang, & Liu, 2017). Besides, social media are well suited for the rapid spread of all opinions regardless, making it possible for them to gain widespread attention (Kata, 2010).

However, unlike traditional media where journalistic norms of objectivity and balance are followed (Lazer et al., 2018) and news is checked for credibility, social media lack an adequate mechanism to control and filter information, thus facilitating spreading of false and misleading information regarding a vast variety of topics (Gao, et al., 2020), including those that are science-related. Some of the most well-known cases of scientific misinformation spreading involve, among others, climate change and global warming (Allgaier, 2019; Al-Rawi, O'Keefe, Kane, & Bizimana, 2021), as well as the shape of the Earth (BBC News,

2019; Cox, 2019; Landrum, Olshansky, & Richards, 2019). Indeed, concerning, for example, the issue of climate change, there is evidence that, at least on YouTube, videos that oppose scientific evidence are more numerous and have a wider appeal than those that are in line with the findings (Allgaier, 2019). However, climate change is just one of the scientific topics on which there is a tendency for valid data to be overshadowed by misleading information and fake news. Beyond that, and among others, an issue that, due to the risk of jeopardizing society as a whole, deserves a special mention, is that of misinformation related to medical science/health (health misinformation).

According to surveys conducted in recent years, the majority of the general population (59% to 81.5% in the United States of America, 55% on average among European Union countries) use the Internet to search for information related to medical issues (Fox & Duggan, 2013; Finney Rutten, et al., 2019; Eurostat, 2021), while, respectively, a survey conducted among patients and their caregivers shows that 72.8% of them use—for the same reason—social media (Marar, Madaney, & Almousawi, 2019). Although there is some evidence that social media can be useful for providing information about medical issues, as well as for dealing with them (Tonsaker, Bartlett, & Trplov, 2014; Daraz, et al., 2019; Gu & Hong, 2019; Marar, et al., 2019), there is a constant and high risk of exposure to misleading and false information (Gu & Hong, 2019; Marar, et al., 2019), and non-scientifically based practices (Tonsaker, et al., 2014; Gage-Bouchard, LaValley, Warunek, Kwon Beaupin, & Mollica, 2017), which, as it has been found, can, in some cases, even lead to death (Neporent, 2014). Research focused on social media platforms has identified phenomena of spreading misleading and false news about various medical issues, such as vaccines (Buchanan & Beckett, 2014; Blankenship, et al., 2018), pandemics (Bora, Das, Barman, & Borah, 2018), eating disorders (Arseniev-Kohler, Lee, McCormick, & Moreno, 2016), non-communicable diseases (Biggs, Bird, Harries, & Salib, 2013), drugs (Cavazos-Rehg, Zewdie, Krauss, & Sowles, 2018) and treatments (Abukaraky, Hamdan, Ameer, Nasief, & Hassona, 2018). However, more than half of people who obtain medical information from internet sources and social media state that they trust the majority of it (Pew Research, 2008, in Kata, 2010; Marar, et al., 2019), while, a proportion of 70% report that the information which they obtain influences their future decisions regarding the pursuit of treatment (Pew Research, 2000, in Kata, 2010). These observations should be considered in conjunction with the research conducted by Pew Research Center in the United States of America, according to which only 15% of people who seek medical information using electronic media report 'always' checking the date of publication and the source providing the information, while only one-third of them contact a doctor to discuss what they have read online (Fox, 2006). Moreover, it is worth mentioning that in cases where users contacted their doctors to confirm the accuracy of the information obtained online, doctors disagreed with them in 36.7% of the cases (Crilly, et al., 2018).

As expected, during health crisis periods, the need for citizens to be informed about what is happening is particularly heightened (Li & Sun, 2021; Wu & Shen, 2021). Thus, during the Covid-19 pandemic, citizens have relied primarily on social media to obtain information (Al-Zaman, 2021; Azer, Blasco-Arcas, & Harrigan, 2021) with data showing that their use has increased by 21% globally (Watson, 2020). Apart from the general public, some health

scientists also used social media as a platform to share and obtain information (Karasneh, et al., 2021), a selection that could maybe reveal their opinion regarding the social role of their profession (Antonatou, et al., 2009). Meanwhile, research conducted in the pre-Covid-19 pandemic era, showed that in similar situations, users tend to perceive social media as a reliable and trustworthy source for obtaining information (McLean & Power, 2013). In the Covid-19 case, rapid spread of the pandemic, combined with the high death rates, caused a global wave of panic and anxiety, while the social isolation which was utilized as a measure to contain the pandemic contributed to the loss of socialization, causing feelings of loneliness (Liu & Liu, 2020). Under the influence of these conditions, and in order to cope with them, people tend to turn to social media in an attempt to interact with other users to share their feelings and seek support (Brummette & Fussell-Sisco, 2015), as well as to discuss and exchange views (Vieweg, Hughes, Starbird, & Palen, 2010; Brummette & Fussell-Sisco, 2015; Shu, et al., 2017; Jang & Baek, 2018), thus taking an active role in the news production and transmission process (Maher et al., 2014).

However, a problem that, even amid a health crisis, and despite efforts by social media platforms to curb it (Brennen, Simon, Howard, & Nielsen, 2020), still thrives within them, is that of the uncontrolled spread of false, inaccurate and misleading information and news (Gu & Hong, 2019; Brennen, et al., 2020; Gao, et al., 2020; Kouzy, et al., 2020; Li, Bailey, Huynh, & Chan, 2020; Pennycook, McPhetres, Zhang, Lu, & Rand, 2020). In the case of Covid-19 pandemic, both rapid spreading and impact of the disease, and lack of adequate information about it (given that it was a debutant virus that had not been previously encountered), created the perfect conditions for misinformation to thrive (Brennen, et al., 2020; Kouzy, et al., 2020; Liu, Shan, Delaloye, Piguet, & Ballet, 2020), with social media once again being the most appropriate medium for its rapid dissemination (Liu, et al., 2020). In addition, it is worth noting that similar observations have been made in other health crises, such as during the pandemic outbreak of H1N1 (Pandey, Patni, Singh, Sood, & Singh, 2010), Zika (Miller, Banerjee, Muppalla, Romine, & Shelth, 2017; Bora, et al., 2018) and Ebola (Oyeyemi, Gabarron, & Wynn, 2014; Pathak, et al., 2015) viruses. In order to address the strong presence of misinformation, World Health Organization used the term 'infodemic' and, combined with the deluge of truthful information observed during the pandemic, identified it as a particularly significant threat to virus containment efforts (World Health Organization [WHO], 2020a). Bermes (2021) suggests that situations such as this one can cause additional stress for users, leading to losing motivation to cross-check information, thus contributing to their increased vulnerability to misinformation, which can potentially have serious and direct health consequences, causing hospitalizations or, in some cases, even deaths (Delirrad & Banagozar-Mohammadi, 2020; Hassanian-Moghaddam, et al., 2020; Pradesh, 2020; WHO, 2020b).

Regarding the presence of misinformation in social media and the levels of user exposure to it, it is worth mentioning Kouzy and his colleagues' findings (2020), who, while investigating the presence of misinformation on Twitter, showed that among all Covid-19-related posts examined, about a quarter (24.8%) contained misleading content, while a significant number (17.4%) contained unverified information. Similarly, Li and colleagues (2020), focusing their

research on YouTube, found that among the most widely viewed videos containing coronavirus information, more than a quarter (27.5%) spread misleading content. Total views of these videos amounted to more than 62 million worldwide at the time of the survey (Li, et al., 2020). This finding may, to some extent, reveal the levels of exposure of social media users to misinformation. However, there is evidence that the rates may be even higher. For example, according to data derived from the UK's Office of Communications survey, around half of UK's population (46%) state that they have been exposed to false and misleading news related to Covid-19 on social media, while, almost two-thirds among them (66%) mention exposure on a daily basis (Ofcom, 2020).

On the other hand, it is worth mentioning that, according to some surveys, the majority of the population seems adept to distinguish misleading news, perceiving them as 'relatively unreliable' (Pennycook, et al., 2020; Roozenbeek, et al., 2020). This observation is in line with findings concerning susceptibility to misinformation regarding other topics (see, for example, Allcott & Gentzkow, 2017). However, cases where a significant proportion of individuals (40%) expressed difficulty in trying to ascertain the content of the news they interacted with have been found (Ofcom, 2020), as well as instances where the majority (60.88%) of individuals appear to believe Covid-19 misinformation, with only a small proportion among them being able to deny (16.15%) or challenge the claims (13.3%) (Al-Zaman, 2021). In accordance with the above, Uscinski and colleagues' (2020) survey results showed that significant parts of the American population believe in relevant Covid-19 conspiracy theories (29%–31% depending on the case).

Using social media to search for medical information seems to have a significant role in shaping this differentiation. For example, Roozenbeek and colleagues (2020) who examined the factors contributing to individuals' susceptibility to misleading content, showed that individuals seeking information about Covid-19 in the context of social media are more vulnerable to misinformation, a finding which is in line with Allington and colleagues' observations (2021), according to whom social media use is positively associated with susceptibility to Covid-19 conspiracy theories. As mentioned above, the presence of misinformation in the context of social media is alarmingly high (Kouzy, et al., 2020; Li, et al., 2020; Ofcom, 2020) and their users are repeatedly exposed to it (Ofcom, 2020). This finding, given Pennycook and colleagues' (2018) observations, that repeated exposure to fake news increases susceptibility to them, could be an explanation for the vulnerability of people who draw information from social media to misleading and false content. Also, as already mentioned, bombardment of information -both true and untrue- that takes place in the context of social media can cause anxiety among users and reduce their motivation to verify information (Bermes, 2021). Bermes's (2021) finding can be considered in conjunction with the observation that social media users anyway tend not to evaluate the accuracy of the content they encounter and read, which plays a key role in the communication of false and misleading information and suggests that a large proportion of misinformation is transmitted due to carelessness (Pennycook, et al., 2020). In addition to the above, it has been found that some technical characteristics of social media (such as, for example, the number of 'likes' and shares) can create the illusion of 'social acceptance', thereby enhancing the perceived

accuracy of misleading content and contributing to its acceptance (Avram, Micallef, Patil, & Menczer, 2020; Pennycook, et al., 2020). In conjunction with that, trusting social media plays a decisive role in misinformation susceptibility and acceptance. This observation is evident from the results of Melki and his colleagues' research (2021), which showed that people who trust Covid-19 news derived from social media are more likely to believe false and misleading information as well as myths related to Covid-19.

In any case, it is clear that significant parts of the population, and especially social media users, seem to believe misinformation they interact with, which is of particular importance. There is considerable evidence that vulnerability to false and misleading content has a decisive influence on individuals' behavior, causing a tendency to reject information from health experts and competent authorities (Islam, et al., 2020; Liu, et al., 2020; Uscinski et al., 2020), and reducing their willingness to comply with public and individual health protection measures (Allington & Dhavan, 2020; Allington, Duffy, Wessely, Dhavan, & Rubin, 2021; Roozenbeek, et al., 2020; Stanley, Barr, Peters, & Seli, 2020), and their intention to get vaccinated against the Covid-19 virus (Roozenbeek, et al., 2020; Muric, Wu, & Ferrara, 2021). More specifically, according to the survey data of Roozenbeek and colleagues (2020), one-unit increase in susceptibility to misinformation (which was measured on a 1-7 Likert scale), is sufficient enough to reduce the probability of vaccinating against Covid-19 by 23% and the likelihood of recommending the vaccine to vulnerable friends and relatives by 28%, thus confirming concerns about misinformation's impact on individuals' health-related decisions. This, as it is understood, may affect the vaccination coverage rates and cause ruptures in the effort to form 'herd immunity' (Jolley & Douglas, 2014), which is a prerequisite for pandemic response.

3. Methodology

3.1 Scope and Aims of the Research

The purpose of the study (research problem) is to investigate and record the attitudes of Greek public universities' student population regarding the reliability of social media, focusing particularly on their science-related information seeking and, more specifically, on issues related to COVID-19 pandemic.

Therefore, objectives of the research (individual research questions) are as follows:

1) What are the attitudes of Greek universities' students regarding the credibility of social media?

2) Do social and educational characteristics affect the attitudes of the student population regarding the reliability of social media?

3) What are the attitudes of Greek universities' students regarding the informative use of social media?

4) What are the attitudes of Greek universities' students regarding the information they receive on scientific issues from social media?

5) Do social and educational characteristics affect the attitudes of the student population regarding the credibility of social media when it comes to scientific issues?

6) What are the attitudes of Greek universities' students regarding their information about Covid-19 pandemic from social media?

7) Do social and educational characteristics affect the attitudes of the student population regarding the credibility of social media when it comes to issues related to Covid-19;

3.2 Population and Sampling

The research population consisted of people studying in various faculties of Greek universities throughout the country. Links to the questionnaire were sent through various social media platforms groups that addressed to tertiary education students (mostly Facebook) accompanied by a text explaining the aims of the study and asking for responses. For this reason, specific terms were utilized while searching for the groups: '*students', 'department of'* accompanied by a department's name (e.g. Philosophy), *'faculty of'* accompanied by a faculty's name (e.g. Education). The total number of respondents to the questionnaires was 557. As the sample is larger than 200 persons, it can be assumed that the distribution is normal and it insures representativeness. The sample is convenient and random.

3.3 Research Method & Tool

The current study adopted a quantitative research method. The questionnaire was selected as the most appropriate tool due to its completion. It is considered that it provides the possibility of recording as many parameters as possible that influence or determine the attitudes of the sample and therefore is evaluated as the most suitable for recording attitudes of a large number of students (Davidson, 1970, in Zagkos, Kyridis, Kamarianos, & Fotopoulos, 2022)

Consolidated, choosing of the questionnaire as a research tool for the present study was made for the following reasons:

1) It easily arouses the interest of the respondents and increases the participation in the research process.

2) The initial decision on the need to use a large sample of subjects and the technical capabilities of the research team favors the use of a questionnaire.

3) The questionnaire is used to collect information about perceptions and opinions of subjects, which are not easy to observe.

4) The questionnaire as a research tool allows continuous testing and interventions to be formulated in the most appropriate way.

For the purposes of the study, a questionnaire was structured as a tool for quantitative research of student's attitudes. The questionnaire includes demographic and social questions, as well as four stop scales (five-point Likert scales) that cover the research questions. The questions are closed-ended, consisting of predetermined answers. Wording of the questionnaire is simple and understandable, aiming at an easy understanding of the content by

the respondents, in order to make the results as close as possible to the purpose of the research.

In summary, the questionnaire consists of the following sections:

1) Demographic and social characteristics of the sample (11 questions)

2) Scale A1: Trust in social media (5-point Likert scale in the form of 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree) (7 questions)

3) Scale A2: Trust in social media: personal preferences (5-point Likert scale in the form of 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree) (7 questions)

4) Scale B: Trust in social media regarding science-related issues (5-point Likert scale in the form of 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree) (16 questions)

5) Scale C: Trust in social media regarding issues related to Covid-19 (5-point Likert scale in the form of 1 = strongly disagree, 2 = disagree, 3 = neither agree nor disagree, 4 = agree, 5 = strongly agree) (17 questions)

The following practice was followed to validate the questionnaire:

1) The research tool was designed in alignment with the literature and, as already mentioned, in accordance with the research problem and the individual research questions

2) A face validity check by 5 independent critical reviewers on behalf of potential sample subjects followed, which helped the researcher to make relevant clarifications and corrections.

3) An additional 10 colleagues were asked to rate each question/statement of the questionnaire on a scale from 1 (completely negative) to 5 (completely positive) in terms of the clarity of its wording, as well as its relevance and adequacy concerning the purpose and objectives of the research. For this reason, (a) the usefulness of the statements (CVR), (b) the relevance of the statements (I-CVIs and S-CVI), and (c) the clarity of the statements (I-CVIs) were calculated (Zamanzadeh, et. al., 2014). Finally, Cohen's index (1960) was calculated based on the following equation:

$$K = (I\text{-}CVI\text{-}Pc)/(1\text{-}Pc) \tag{1}$$

Calculation of Cohen's kappa was obtained by the following equation:

$$Pc = [N!/A!\,(N\text{-}a)!] \times 0.5^{N} \tag{2}$$

The statistic value of the kappa indicator is .79.

4) The questionnaire was distributed through social media platforms.

5) During the collection of responses (76 responses), a reliability check of the scales (Cronbach's alpha index) was performed and the relative values were very satisfactory.

6) Data verification and analysis process followed.

3.4 Analysis of the Data

Data were analyzed using IBM SPSS Statistics v.27 software and both descriptive and inferential statistics were used. To examine the effect of demographic factors as well as information collection questions on the degree of agreement-satisfaction expressed by the subjects regarding the scale statements, t-test was used for binomial variables and analysis of variance (ANOVA) test was used for variables receiving more than two values.

3.5 Moral and Ethical Issues of the Study

Taking into account the scientific community's positions on the responsibility and ethical awareness of conducting research (Robson & McCartan, 2016), distortion and concealment of the true purpose of the research were avoided. In addition, the following were avoided during the participation: participation of subjects without prior information, coercing subjects to participate, exposing participants to stressful situations and any invasion of their privacy (Robson & McCartan, 2016). All participants retained the right to withdraw from the questionnaire whenever they wanted to do so. The resulting data were used solely for the purpose of this study. Therefore, it is considered that the practices that took place at all stages of the research process are characterized by ethics and adherence to international practice regarding scientific research ethics.

3.6 The Sample

The 557 students of the research were distributed regarding their gender, age, the field and the year of their studies, their place of origin and residence, their ideological integration and politicization level, the educational level of their parents, and their economic independence and state. Table 1 shows the characteristics of the sample.

Table 1. Demographic and social characteristics of the sample

	f	%
Gender		
Male	126	22,6
Female	431	77,4
Age		
18–20	130	23,3
21–22	189	33,9
23 and over	238	42,7
Field of Studies		
Humanities	145	26,0
Science	185	33,2
Social sciences	77	13,8
Educational Sciences	135	24,2
Arts	15	2,7

Year of Studies		
1–2	161	28,9
3–4	232	41,7
5 and over	164	29,4
Place of origin		
Greece	544	97,7
Other	13	2,3
Residence		
Urban area	321	57,6
Rural area	65	11,7
Suburban area	171	30,7
Ideological integration		
Far Right	5	0,9
Right	101	18,1
Centre	226	40,6
Left	167	30,0
Far Left	16	2,9
Anarcho-autonomous space	42	7,5
Politicization Level		
Very low	137	24,6
Low	152	27,3
Moderate	186	33,4
High	66	11,8
Very High	16	2,9
Mother's education		
Has not completed Primary Education	13	2,3
Primary education graduate	55	9,9
Secondary education graduate	216	38,8
Tertiary graduate	225	40,4
Postgraduate	48	8,6
Father's education		
Has not completed Primary Education	19	3,4
Primary education graduate	77	13,8
Secondary education graduate	206	37,0
Tertiary graduate	196	35,2
Postgraduate	59	10,6

Economic independence		
Yes	169	30,3
No	388	69,7
Economic state (Yours)		
Very Bad	2	1,2
Bad	16	9,5
Moderate	96	56,8
Good	47	27,8
Very Good	8	4,7
Economic state (Family's)		
Very Bad	3	0,8
Bad	16	41
Moderate	205	52,8
Good	141	36,3
Very Good	23	5,9

3. Results

Table 2 shows Cronbach's alpha test for each scale. As we can see from Table 3, the mean of the scales A1, B and C is below 3.5, showing a not especially strong but meaningful degree of disagreement. The mean of A2 scale, being significantly close to 3.5, tends to differentiate, showing a relative division between participants' statements.

Table 2. Cronbach's alpha test for each scale

Scale's Code	Name of the scale	Cronbach's alpha
A1	Trust in social media	,787
A2	Trust in social media: personal choices	,707
B	Trust in social media regarding science-related issues	,901
C	Trust in social media regarding issues related to Covid-19	,907

Table 3. Means of the scales

Scale's Code	Name of the scale	Mean	S.D.
A1	Trust in social media	2,8214	,65644
A2	Trust in social media: personal choices	3,4763	,60012
B	Trust in social media regarding science-related issues	2,9770	,65976
C	Trust in social media regarding issues related to Covid-19	2,8997	,69826

Table 4. Lowest means of the A1 scale

Code	Statement	Mean	S.D.
A1.4	Social media helps separating the truth from the fake news	2,52	1,055
A1.6	Social media is mostly free from undue political and government influence	2,50	1,069
A1.7	Social media is mostly free from undue financial influence	2,30	1,005

Table 5. Highest means of the A2 scale

Code	Statement	Mean	S.D.
A2.4	I choose social media as my source of information more often than other Media	3,68	1,179
A2.5	I can differentiate real from fake news posted on social media	3,68	,884
A2.2	I cross-examine the information I get from social media	4,03	,941

Table 6. Lowest means of the B scale

Code	Statement	Mean	S.D.
B1	Scientific topics are accurately presented on social media	2,66	,968
B4	Information related to scientific issues shared on social media is reliable.	2,63	,854
B5	Social media helps separate truth from fake news when it comes to scientific issues.	2,55	1,005

Table 7. Lowest means of the C scale

Code	Statement	Mean	S.D.
C16	Information related to COVID-19 shared on social media is, for the most part, independent of undue financial influence.	2,43	,999
C14	Information related to COVID-19 shared on social media is, for the most part, independent of undue political and government influence.	2,39	1,060
C12	I am solely informed by social media on issues related to COVID-19.	2,32	1,246

Consolidated, the statements with the highest degree of disagreement, as the Table 4, Table 6 and Table 7 indicate, are:

For scale A1 (Trust on social media):

A1.4 Social media helps separating the truth from the fake news (2.52/5)

A1.6 Social media is mostly free from undue political and government influence (2,50/5)

A1.7 Social media is mostly free from undue financial influence (2.30/5)

Respectively, for scale B (Trust in social media regarding science-related issues):

B.1 Scientific topics are accurately presented on social media (2,66/5)

B.4 Information related to scientific issues shared on social media is reliable (2,63/5)

B.5 Social media helps separating truth from fake news when it comes to scientific issues (2.55/5)

Regarding scale C (Trust in social media regarding issues related to Covid-19):

C.16 Information related to COVID-19 shared on social media is, for the most part, independent of undue financial influence (2,43/5)

C.14 Information related to COVID-19 shared on social media is, for the most part, independent of undue political and government influence (2,39/5)

C.12 I am solely informed by social media on issues related to COVID-19 (2,32/5)

As for scale A2, the statements with the highest degree of agreement, as the Table 5 indicates, are:

A2.4 I choose social media as my source of information more often than other Media (3,68/5)

A2.5 I can differentiate real from fake news posted on social media (3,68/5)

A2.2 I cross-examine the information I get from social media (4,03/5)

In order to examine the effect of demographic factors as well as the information-gathering questions on the degree of agreement expressed by the sample subjects, t-test were used for the binomial variables and test of variance (ANOVA) for variables taking more than one value.

According to the results of the tests, the factors gender, age, existence or not of financial independence, year of study and place of origin do not seem to differentiate the responses of the sample subjects. Same observations are made concerning the factors 'field of study', 'economic situation of the family' and 'level of education of the father'. On the contrary, factors ideological affiliation, level of politicization, the mother's level of education and the economic situation of subjects who declare themselves economically independent seem to influence the responses to the above statements.

More specifically, according to the ANOVA Analysis using the Bonferroni Post-Hoc Test, statistically significant differences were noticed on the A1 scale, "*Trust in Social media*", between subjects reporting centrist ideological affiliation and those reporting ideological affiliation in the anarcho-autonomous space. Subjects affiliated with the anarcho-autonomous space seem to report a higher degree of trust than subjects affiliated with the centrist space (F = 2,908, df = 5, sig. = ,013). Similarly, concerning the A2 scale, "*Trust in Social media: personal preferences*", a statistically significant difference was noticed between subjects who belong to the anarcho-autonomous space, and those who belong to the right and center space, with subjects who report membership in the anarcho-autonomous space expressing a higher degree of trust than the other two groups (F = 4,435, df = 5, sig. = ,001). Moreover, a statistically significant difference seems to show up

on the C scale as well, "*Trust in social media for issues related to COVID-19*", between subjects reporting membership in the anarcho-autonomous space and those reporting membership in the center space. Subjects who join the anarcho-autonomous space seem to report a higher degree of trust compared to subjects who join the center space (F = 3,273, df = 5, sig. = ,006). Regarding the level of politicization, ANOVA analysis using Bonferroni Post-Hoc Test showed a statistically significant difference in the A2 scale, "*Trust in Social media: personal preferences"*, between subjects in the sample stating "a lot" and those stating "not at all", "a little" and "moderately". Subjects who report "a lot" in the level of politicization seem to report a higher degree of confidence than the three aforementioned categories (F = 5,983, df = 4, sig. = ,000). Moreover, regarding scale B, "*Trust in Social media about scientific issues*", a statistically significant difference was found in terms of the factor "level of mother's education", between subjects who answer "secondary school graduate" and those who answer "tertiary school graduate". More specifically, subjects who answer "secondary school graduate" seem to express a higher degree of confidence than those who answer "tertiary school graduate" (F = 2,359, df = 4, sig. = ,052). Similarly, in terms of scale C, "*Trust in social media for issues related to COVID-19*", showed a statistically significant difference between subjects giving the response "secondary school graduate" and those giving the response "tertiary school graduate", with subjects giving the response "secondary school graduate" expressing a higher degree of trust than those giving the response "tertiary school graduate" (F = 3,035, df = 4, sig. = ,017). Finally, regarding the economic status of economically independent individuals, the ANOVA analysis with Bonferroni Post-Hoc Test showed a statistically significant difference in the A2 scale, "*Trust in Social media: personal preferences*", between sample subjects who report "moderate" economic status and those who report "very bad" economic status. More specifically, subjects reporting "moderate" economic status appear to express a higher degree of trust than those reporting "very bad" economic status (F = 2,287, df = 4, sig. = ,062).

4. Discussion

The ever-increasing digitalization that is taking place nowadays is bringing about significant changes in a multitude of areas, among which is that of communication and information (Kalogeropoulos, et al., 2021). Similarly, findings suggest that individuals' behavior in terms of their news-seeking and news consumption practices has changed radically (De Keersmaecker & Roets, 2017). As a consequence of the above, it is observed that traditional media are gradually being degraded, abandoned, and replaced by social media (Newman, et al., 2021) which, despite the many concerns they raise among researchers, are now the most prevalent means of informing and obtaining information from citizens on various issues (Newman, et al., 2021), including issues related to medical and health science (Fox & Duggan, 2013; Finney Rutten, et al., 2019; Marar, et al., 2019; Eurostat, 2021). To complement this finding, it is worth mentioning that, according to research, the tendency of citizens to seek information on health issues via the Internet and Social media increases significantly during health crises (Brummette & Fussell-Sisco, 2015; Shu, et al., 2017; Jang & Baek, 2018), an observation also made during the recent Covid-19 pandemic (Watson, 2020; Al Zaman, 2021; Azer, et al., 2021; Eurostat, 2021; Karasneh et al., 2021).

At the same time, the phenomenon of the widespread dissemination of false and misleading information is being observed, with social media being the most appropriate channel for its production and its rapid and widespread dissemination (Allcott & Gentzkow, 2017; Zimmer, et al., 2019; Avram, et al., 2020; Kouzy, et al., 2020; Li, et al., 2020; Ofcom, 2020; Pennycook, et al., 2020). Among the issues that vary in terms of their subject matter, the presence of misinformation is also found in general science-related issues (Allgaier, 2019; Landrum, et al., 2019; Cox, 2019; Al-Rawi, et al., 2021), as well as, in particular, the science of medicine (Kata, 2010; Buchanan & Beckett, 2014; Tonsaker, et al., 2014; Arseniev-Kohler, et al., 2016; Biggs, et al., 2013; Gage-Bouchard, et al., 2017; Blankenship, et al., 2018; Bora, et al., 2018; Cavazos-Rehg, et al., 2018; Gu & Hong, 2019; Brennen, et al., 2020; Gao, et al., 2020; Kouzy, et al., 2020; Li, et al., 2020; Liu, et al., 2020; Pennycook, et al., 2020; WHO, 2020a).

Despite the conclusion of some researchers that the majority of people are, to some extent, able to distinguish between true and false information (Allcott & Gentzkow, 2017; Pennycook, et al., 2020; Roozenbeek, et al., 2020), it is a given that significant segments of the population appear to believe the misinformation with which they interact, which can potentially, on the one hand, have a direct impact on their health (Delirrad & Banagozar-Mohammadi, 2020; Hassanian-Moghaddam, et al., 2020; Pradesh, 2020; WHO, 2020b), and, on the other, cause instability in society and undermine international community's efforts to address various risks and health crises, with the most recent example being the Covid-19 pandemic (Allington & Dhavan, 2020; Islam, et al., 2020; Liu, et al., 2020; Roozenbeek, et al., 2020; Stanley, et al., 2020; Uscinski et al., 2020; Allington, et al., 2021; Muric, et al., 2021). Findings from previous research have shown that individuals who trust social media as a source of information and rely primarily on it, rather than another medium, are more vulnerable and susceptible to misinformation (Roozenbeek, et al., 2020; Uscinski, et al., 2020; Allington, 2021; Al-Zaman, 2021; Melki, et al., 2021). This is due to the strong presence of misleading and false information in the context of social media (Kouzy, et al., 2020; Li, et al., 2020; Ofcom, 2020), to which users are exposed on a daily basis (Ofcom, 2020), a condition that, according to the findings of various studies (Bessi, et al., 2015; Mocanu, et al., 2015; Pennycook, et al., 2018), can have a significant impact on users' perceptions of their accuracy, thus enhancing humility towards them. Still, in correlation with the above, it has been found that users of social media, drawn away by the format of information presentation on the platforms, tend not to evaluate the accuracy of the content they interact with (Pennycook, et al., 2020), while research findings suggest that various features of social networks can create the illusion of 'social acceptance' of misleading content, in turn enhancing its perceived accuracy and thereby contributing to its acceptance (Avram, et al., 2020, Pennycook, et al., 2020). As an extension of this observation, it is important to note that, according to Garrett and Weeks (2013), overturning misconceptions created by the acceptance of misinformation is extremely difficult to achieve.

From the survey's results, it is clear that Greek universities' students, in line with the trends of the international community (Newman, et al., 2021), often resort to the use of social media and internet sources, which, as has been observed by previous research (Šiđanin, et al., 2021),

are at the forefront in informing them about a variety of issues, including issues related to science in general, as well as the Covid-19 pandemic. However, it is worth mentioning that, despite the fact of extensive use of social media for informational purposes, and the fact that they perceive them as a useful tool in the hands of citizens, the students in the sample tend not to consider them as the most reliable source of obtaining information, regardless of the topic, while they often use other media in order to be informed, observations that are in line with those obtained from previous research (Šiđanin, et al., 2021). Still, as has been observed—albeit to a lesser extent—by Šiđanin and colleagues (2021), a significant number of the students in the sample seem to believe that information shared on social media platforms related to scientific issues, as well as issues related to Covid-19, are unreliable and not presented accurately. At the same time, a noteworthy observation directly related to the above is that, regardless of the issue under investigation, the students in the sample state that they try to cross-check the information they consume by drawing news from other media, and are, according to their statements, able to distinguish false from true in a remarkable percentage. This could possibly be attributed to their high educational background (Jelen & Lockett, 2014; Lewandowsky & Oberauer, 2021; Melki, et al., 2021; Kennedy, et al., 2022). It is worth mentioning that this particular data from the survey contradicts the Pennycook and colleagues' results (2020), according to which social media users are not actively involved in the processes of assessing the reliability and accuracy of the content of the information they interact with. Students in the sample appear more confident about their personal choices, which could, perhaps, indicate that they critically evaluate the source from which they obtain information and give weight to its reliability. Still, in contrast to findings from previous research showing that the medical information that users derive from social media platforms influences their decisions, as well as the strategies they utilize to address their problems (Pew Research, 2000, in Kata, 2010; Marar, et al., 2019), individuals in the sample did not report any correlation between the information they obtained from social networks and their decision to vaccinate or not. Of the demographic factors, their ideological affiliation, their level of politicization, their mother's level of education, as well as the economic status of subjects who declare themselves economically independent seem to have an influence, to some extent, on the formation of their attitudes.

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