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Developing an attitude scale for university students who perceived scientists as social media phenomena during the 2020 and 2021 Covid-19 pandemic

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Abstract

The aim of this study was to develop a measurement tool that would determine university students' attitudes toward the phenomena of scientists on social media during the period of Covid-19 pandemic. The sample of the study included 780 students studying at different departments and programs of universities in Turkey. The Scale of Students' Attitudes on Scientists as Phenomena on Social Media was developed in this study as a 5-point Likert scale with 27 items and 5 factors: Actuality of the shared post, Effect of the shared post on personal development, Credibility of the shared post, Dissemination of the shared post and Recognition of the scientist. Considering the overall reliability of the scale, Cronbach's alpha coefficient was calculated as 0.957 and test-retest reliability coefficient as 0.942. As a result of the confirmatory factor analysis, the fit index values were found to be $x^2/sd=1.998$, RMSEA=0.070, S-RMR=0.062, IFI=0.97, NNFI=0.97, NFI=0.95, CFI=0.97, GFI=0.92, AGFI=0.88, PNFI=0.83 and PGFI=0.67. These values examined in relation to the model's adequacy were determined to be perfectly acceptable.

Key words: *university students; Covid-19; scientist; social media; phenomenon; pandemic.*

Introduction

The Internet and social media have caused massive change in interpersonal communication, so today they allow rapid circulation of information. In the 21st

century, the Internet brings people together through global networks, by crossing borders and launching a new era with tools that connect people and increase access to information (Castells & Cardoso, 2006; Warschauer, 2009). Accordingly, an interest in different disciplines of social sciences has emerged with the rise of the Internet, begging the question of how this new technology will affect social dynamics (Wellman, 2002). Time spent on the Internet mostly encompasses social media sites, which are used mostly by those aged 18-34 (Ryan, 2016). Many websites and applications are products of the *Web 2.0* era (Laughey, 2010). Social media is a technology-based platform, including internet-based applications that allow users to create and modify content (Kaplan & Haenlein, 2010). Furthermore, social media is a multi-faceted communication model where users not only produce content but constantly interact with each other on various platforms (Çölekçi & Başol, 2019). This reveals different forms of interaction between users (Hansen et al., 2011) and creates an online connective culture where platforms enable access (Van Dijk, 2013) and allow the spread of messages through online social interactions, using web technology (Parker, 2010). It is precisely this high-scale and accessible communication technology that allows people to easily influence others in different groups (Blossom, 2009). Social media is the fastest-growing technology in the context of communication technologies, with an increasing global rate of possession and use of technological communication tools (Kang & Schuett, 2013). Following the emergence of Web 2.0 and advances in information and communication technologies, social media sites have become very popular (Hajli, 2015). The most widely-used social networking sites are *Facebook, Youtube, Whatsapp*, *Twitter, Messenger, Weixin/WeChat* and *Instagram* (Statista, 2020). Recently, participation in social media sites among teenagers and young adults has significantly increased (Li, 2007). Young people can be affected by cultural changes in society, but can also quickly adapt to these changes (Şahin & Cem, 2005). The use of social media is common among university students due to its benefits: it allows students to change their profiles, it is free, accessible, easy to use (Haythornthwaite, 2005; Chiou & Cheng, 2013), and it provides a social environment where students and academics alike can share their thoughts on social media and interact with others in real time (Chana & Dicianno, 2011). Moreover, users of social media applications can communicate with friends and share photos, videos and opinions. These applications provide access to information about other users to the extent allowed in their profiles (Boyd & Ellison, 2007). Thanks to social media, the messages and thoughts of today's leaders are easily and rapidly spread, and they affect opinions, attitudes, decisions and behaviours of their followers, reaching various target groups in many ways (Veirmen et al., 2017; Brown & Fiorella, 2013). Social media transforms traditional media-audience relations to mutual and interactive (Amelina & Zhu, 2016). With the increased use of social media platforms, awareness of the concept of phenomenon is also increasing, and each social media platform creates its own phenomena based on its content and characteristics. The suggestions and posts shared by the phenomena are taken into consideration as those

identified as phenomena have additional knowledge of a particular product or situation (Armağan & Doğaner, 2018). Along with the fact that social media provides users with the opportunity to create and share content, phenomena followed by a large number of users have emerged on social networks (Hajli, 2013). The social media phenomenon concept refers to individuals who attract attention with the content they create through social networking sites such as *Instagram*, *Facebook, Twitter, Vine* and *Snapchat,* and increase their popularity via social media platforms (Marwick & Boyd, 2011). Celebrities who reflect the values of contemporary society have a persuasive power that can influence ideas and preferences (Kim et al., 2014). The phenomena constantly share posts of interest to their followers and carefully manage their social media accounts in order to increase the number of their followers and maintain their admiration (Marwick & Boyd, 2011). The number of followers is the key criteria for determining the effectiveness of social media phenomena (Chen, 2017). Social media phenomena can be public figures, political leaders or social media users who comment on a product or convey their experiences (Cha et al., 2010). If the opinions and values of the person sharing on social media overlap with the recipient's, confidence in the information on social media grows accordingly (Metzger et al., 2010). If the person sharing information is a well-known source such as a household-name journalist, academic or researcher, readers' beliefs that the news is credible will also increase (Stroud & Lee, 2013). Social media usage rapidly increased due to the Covid-19 pandemic, which shows how intensely its impact has been felt worldwide. People received information about the pandemic from social media platforms in addition to printed media and broadcasting channels. Considering the report published by *Socialbakers* about the pandemic between February 1st and March 21st 2020, the three most frequently used hashtags on *Facebook* and *Instagram* were #coronavirus, #Covid19 and #Covid_19. These data show that the current issues influence social media (https://www.socialbakers.com). One of the most important reports of *Adba Analytics* and the *Brand Age Magazine* examined the relationship between social media and Covid-19 from January 21st to March 11th 2020. The posts and conversations shared by social media users about the pandemic were evaluated by examining posts shared primarily on *Twitter, YouTube*, blogs, news sites and forum sites, along with others in various languages such as English, German, Japanese, Russian, Portuguese, Italian, French, Spanish, Chinese, Turkish, Farsi and Arabic. According to the report's findings, the number of posts regarding the Covid-19 pandemic shared worldwide by social media users throughout the pandemic period exceeded 275 million. Japan led with 41.272.779 posts, followed by the USA (37.932.712), China (5.581.751) and Italy (3.597.707). In Turkey, 6.506.597 posts were shared through social media (https://www.cybermagonline.com/koronavirus-sosyal-medyaya-nasil-yansidi). According to a report published by the *Global Web Index* in April 2020, with the participation of 4000 users in the United States and England regarding social media usage of different generations during the pandemic period, it was determined that Generation Z (aged 16-23) intensely uses

online video channels such as *YouTube, Tiktok, Instagram* and *Twitter*, and members of this generation are used to receiving current news and information from online platforms. As in Generation Z, the use of online video channels such as *YouTube* and *Netflix* by Generation Y (aged 24-37) (Millennium) is also very high. At the same time, unlike Generation Z, although the use of Twitter and Instagram by members of Generation Y is high, they use social media both to have fun, learn about matters in hand and follow the news. Generation X (aged 38-56) follows the traditional printed media and broadcasting channels in addition to social networks such as *YouTube*. Finally, the Baby Boomer generation (aged 57-64) was found to rarely follow online platforms, as expected, and they continue the habit of watching television (https://www.visualcapitalist.com/media-consumption-covid-19/). Results of our research determined that especially members of generations Z and Y intensively used social media, not only for entertainment purposes but also as news sources during the Covid-19 pandemic period. Given that scientists are reliable as a source of information, and their attitudes and opinions on the subject are important in informing people about the Covid-19 pandemic, the rate of following scientists on social media has also increased. Considering the effects of social media in today's world, it can be concluded that people internalize the thoughts and posts shared by individuals they perceive as phenomena; moreover, they are influenced by the phenomena's thoughts and attitudes when making decisions about actual events or situations they are involved with. This study aims to develop a measurement tool to determine the attitudes of university students, who belong to Y and Z generations, towards scientists as social media phenomena during the Covid-19 pandemic period.

For this purpose we examined measurement tools in the literature used to investigate individuals' attitudes towards social media phenomena. The following scales were found: *Facebook Passion Scale* developed by Vallerand et al. (2003), consisting of 17 items and three factors - Passion, Harmony and Obsession; *Addiction Scale for Television Programs* developed by Russell et al. (2004), consisting of 16 items and factors such as Escape, Fashion, Imitation, Modelling, Desire and Possession of special items*; Facebook Density Scale* developed by Ross et al. (2009) with four factors - Permanence, Boredom, Overuse and Self-Expression; *Social Media Affinity Scale* developed by Gerlich et al. (2010), including 13 items and three factors - Use of value, Common interests and Business and organizations uses; *Bergen Facebook Addiction Scale* developed by Andreassen et al. (2012) to evaluate the level of addiction to Facebook, consisting of six factors - Standing Out, Tolerance, Mood change, Repetition, Withdrawal and Conflict; *Social Media Addiction Scale* developed by Ünal and Deniz (2015), which includes 41 items and four factors - Occupation, Mood change, Repetition and Conflict; *Scale of Use and Needs of Social Networking* developed by Ali et al. (2020), consisting of 18 items and five factors - Cognitive needs, Diversion needs, Emotional needs, Personal adaptation needs and Social adaptation needs; *Social Media Addiction Scale* developed by Şahin (2018), consisting of 29 items and four factors - Virtual tolerance, Virtual

communication, Virtual problem and Virtual information; *Social Media Disorder Scale* developed by Fung (2019), with nine items and two factors; and *Scale of Social Media Addiction in Adolescents* developed by Orbatu et al. (2020), with 13 items and three factors - Choosing virtual life, Deterioration in functionality and Virtual pleasure.

The literature review found no measurement tool for determining the individuals' attitudes towards scientists as social media phenomena. The subject was therefore considered worthy of examination in order to fill this gap in the literature.

Method

The participants in this study, conducted in Turkey in 2020, were chosen with the random sampling method. The screening model used in the study includes the screening arrangements made on the whole universe or a group, population or sample in order to make general judgments (Karasar, 2000).

Research sample

Firstly, during the scale's development phase, the data for exploratory factor analysis was collected online from 420 students studying at universities located in different geographical regions with different demographic characteristics. Additional data was collected from 205 students at universities in different geographic regions to perform the first level confirmatory factor analysis of the scale obtained as a result of exploratory factor analysis. Finally, data were collected from 155 university students three weeks after the implementation to calculate the test-retest reliability coefficient of the scale. Therefore, the research sample included 780 students studying at various departments of universities located in different parts of Turkey. The percentage (%) and frequency (f) values of the students' demographics are presented in Table 1.

Table 1
Demographics of students participating in the scale's development and implementation

Variable	Exploratory Factor Analysis (EFA)		Confirmatory Factor Analysis (CFA)		Test-Retest	
Gender	(f)	(%)	(f)	(%)	(f)	(%)
Male	186	44.3	106	51.9	73	47.1
Female	234	55.7	99	48.1	82	52.9
Class	420	100	205	100	155	100
1st Class	143	34.0	50	24.3	43	27.7
2nd Class	100	23.8	53	25.7	32	20.6
3rd Class	67	16.0	42	20.4	28	18.1
4th Class	110	26.2	60	29.1	52	33.5
Age	420	100	205	100	155	100
17-20	128	30.5	45	21.8	39	25.2
21-25	231	55.0	117	56.8	84	54.2
26-30	25	6.0	17	8.3	18	11.6
31-35	13	3.1	8	4.4	7	4.5
36 and over	23	5.5	18	8.7	7	4.5

Variable	Exploratory Factor Analysis (EFA)		Confirmatory Factor Analysis (CFA)		Test-Retest	
Geographical region where the university is located	420	100	205	100	155	100
Mediterranean Region	43	10.2	26	12.6	7	4.5
Black Sea Region	103	24.5	40	19.4	21	13.5
Aegean Region	16	3.8	7	3.4	6	3.9
Central Anatolia Region	111	26.5	53	25.7	11	7
Eastern Anatolia Region	61	14.5	25	12.1	27	17.4
Southeast Anatolia Region	11	2.6	11	5.9	45	29
Marmara	75	17.9	43	20.9	38	24.5
Total	420	100	205	100	420	100

Frequency (f) and percentage (%) values of the participants with regard to exploratory and confirmatory factor analysis are presented in Table 1.

Development of the scale

In the development process of the *Scale of University Students' Attitudes on Scientists as Social Media Phenomena*, developed to determine university students' perceptions of scientists as phenomena on social media during the Covid-19 pandemic period, the following steps were taken: (i) Literature review and creating an item pool, (ii) Getting expert opinion, (iii) Item-total correlations, (iv) Item discrimination, (v) Exploratory factor analysis, (vi) Internal consistency analysis with Cronbach's alpha and test-retest reliability analysis, (vii) Examining correlations between sub-dimensions, and (viii) First level confirmatory factor analysis.

Literature review and creating an item pool

In the phase of creating an item pool, firstly, four academics who specialized in the field of social media were interviewed. Then a 33-item pool was created by examining national and international publications and published interviews with experts in printed and visual media relating to our study topic.

Getting expert opinion

The 33-item scale form was presented to 4 academic experts in the field of social media, who were informed about the subject of the study, in order to receive their comments. In accordance with their recommendations, the expression "man of science" in the scale items was changed to "scientist". In order to determine the suitability of the scale items for university students, 15 students were asked to fill out the form and specify any points they had difficulty understanding. The specified items were

modified in line with feedback from the students. After this, a trial form of 33 items was prepared.

Item analysis

Results of exploratory factor analysis

Before starting exploratory factor analysis, the data were checked for incorrect values and, accordingly, 10 forms were excluded from the study. In addition, Mahalanobis distance was calculated to determine extreme values, and 2 questionnaires that were found to contain such values were excluded from the study. The Mahalanobis value above 7 is accepted as extreme value (Feild, 2005). Afterwards, the skewness and kurtosis coefficients were examined in order to determine whether the obtained data were normally distributed, and these coefficients were found to be in range from -0.457 to 0.420 for the obtained data; therefore, normal distribution was confirmed. Skewness and kurtosis values between -1.5 and +1.5 are considered to show normal distribution (Tabachnick & Fidell, 2013).

Total correlation value of the 33 items in the item pool was examined before performing exploratory factor analysis. Items in the scale with the total square value of 0.40 and above were left in the scale. In the analysis, the factor load value of the 33 items was determined to be 0.40 and above. Total correlation values of the items are shown in Table 2.

Table 2
Total correlation values of the scale's items

Item No	N	Mean Value	Standard Deviation	Correlation(r)	p
I1	420	3.49	1.248	.636	0.000**
I2	420	3.93	1.165	.650	0.000**
I3	420	4.11	1.021	.640	0.000**
I4	420	2.82	1.301	.532	0.000**
I5	420	3.11	1.310	.638	0.000**
I6	420	2.95	1.279	.576	0.000**
I7	420	3.68	1.168	.732	0.000**
I8	420	2.93	1.442	.331	0.000**
I9	420	3.10	1.281	.559	0.001*
I10	420	2.47	1.381	.520	0.002*
I11	420	3.54	1.205	.745	0.000**
I12	420	3.81	1.101	.637	0.000**
I13	420	3.12	1.212	.674	0.000**
I14	420	3.25	1.240	.714	0.000**
I15	420	3.28	1.304	.665	0.000**
I16	420	3.53	1.252	.599	0.000**
I17	420	3.74	1.194	.706	0.000**
I18	420	3.53	1.140	.740	0.000**
I19	420	3.21	1.268	.684	0.000**

Item No	N	Mean Value	Standard Deviation	Correlation(r)	p
I20	420	3.36	1.196	.703	0.000**
I21	420	3.14	1.278	.743	0.000**
I22	420	3.40	1.167	.764	0.000**
I23	420	3.24	1.192	.742	0.000**
I24	420	2.87	1.353	.566	0.000**
I25	420	4.33	1.035	.436	0.000**
I26	420	3.60	1.161	.658	0.000**
I27	420	3.13	1.217	.709	0.000**
I28	420	3.43	1.188	.748	0.000**
I29	420	3.47	1.155	.718	0.000**
I30	420	3.59	1.158	.754	0.000**
I31	420	3.62	1.199	.680	0.000**
I32	420	3.60	1.173	.627	0.000**
I33	420	3.85	1.177	.661	0.000**

p<0.01**; p<0.05*

Considering the data given in Table 2, total item correlation values of the 33 items in the scale were determined to be between 0.764 and 0.436, and the difference was found to be statistically significant (p<0.01). Factor analysis was applied to the 33 items, and the KMO value for the scale was calculated and Bartlett's sphericity test performed. The exploratory factor analysis was conducted for 420 university students. The recommended number of participants in a study should be at least five times the number of items for the use of factor analysis (Child, 2006). Therefore, 420 university students was found to be a sufficient number to perform exploratory factor analysis. Results of KMO and Bartlett's sphericity test are shown in Table 3.

Table 3
Kaiser-Meyer-Olkin and Bartlett's sphericity test results for the scale

KMO and Bartlett's Test		
KMO Sample Proficiency Test		0.958
Bartlett's Sphericity Test	χ^2	8172.713
	sd	528
	Sig.	.000

According to the data in Table 3, it was determined that the KMO value of the scale is 0.90 and above, which signifies excellent fit of the distribution for factor analysis. With values greater than or equal to 0.60, the sample is appropriate for exploratory factor analysis (Hutcheson & Sofronio, 1999; Büyüköztürk, 2007). The results of Bartlett's sphericity test for the scale were significant [χ^2 = 8172.713/ sd= 528; p<0.000], which suggests that the measured variable is multivariate in the universe parameter (Thompson, 2004). The factors obtained as results of the principal rotated components analysis and factor loads for the items in these factors are given in Table 4.

Table 4
Results of principal rotated components analysis of the scale items

No	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5
I2	.896				
I3	.860				
I25	.752				
I33	.741				
I1	.737				
I29		.854			
I28		.841			
I27		.769			
I21		.661			
I12		.632			
I7		.595			
I16			.827		
I20			.821		
I9			.778		
I18			.776		
I17			.636		
I14			.632		
I13			.563		
I10				.844	
I24				.811	
I15				.682	
I6				.532	
I8					.854
I4					.784
I32					.729
I31					.626
I5					.610
Eigenvalue	4.911	4.892	4.650	3.373	1.982
Explained Variance	14.882	14.826	14.091	10.222	6.005

According to the data in Table 4, i.e. the result of exploratory factor analysis applied to the scale items, it was found that 19th and 22nd factor overlap with 2nd and 3rd factor, 26th item overlaps with 1st and 2nd factor, 23rd item overlaps with 2nd and 3rd factor and 30th item was found to overlap with 3rd and 4th factor. These items were removed from the scale since the difference between them was smaller than 1. The factor analysis was repeated and, after removing the specified items, 5 factors with eigenvalue higher than 1 were obtained. Hence, the final structure of the scale comprised 5 factors. The eigenvalue in this study was 1.00, and 5 factors with eigenvalues greater than 1.00 were identified. In the factor analysis, eigenvalues 1.00 or higher are considered important

(Büyüköztürk, 2002). It was determined that factor load values of items (2, 3, 25, 33 and 1) in the first factor vary between 0.737 and 0.896, with this factor's eigenvalue of 4.911, which explains 14.882% of the total variance. The factor load values of items (29, 28, 27, 21, 12 and 7) in the second factor ranged from 0.595 to 0.854, with eigenvalue of 4.892, which explains 14.826 % of the total variance. The factor load values of items (16, 20, 9, 18, 17, 14 and 13) in the third factor vary between 0.563 and 0.827, giving an eigenvalue of 4.650, which explains 14.091 % of the total variance. In the fourth factor, the factor load values of items (10, 24, 15 and 6) vary between 0.532 and 0.844, therefore, this factor has an eigenvalue of 3.373 and explains 10.222% of the total variance. Finally, the factor load values of items (8, 4, 32, 31 and 5) in the fifth factor vary between 0.610 and 0.854, and this factor has eigenvalue of 1.982, which explains 6.005% of the total variance. The total variance rate of the scale was calculated as 60.026%. Variance rates ranging from 40% to 60% in factor analysis are considered ideal (Kline, 1994). Correlation values for the five factors are presented in Table 5.

Table 5
Correlation values of the scale's factors

Factors	$\bar{x}$	Ss	Fac1	Fac2	Fac3	Fac4	Fac5
Actuality of the shared Post	3.94	.877	1				
Effect of the shared post on personal development	3.44	.924	.669**	1			
Credibility of the shared post	3.37	.895	.644**	.774**	1		
Dissemination of the shared post	2.89	.989	.458**	.667**	.688**	1	
Recognition of the scientist	3.21	.866	.605**	.719**	.680**	.562**	1

** p<0.01

Regarding the relationship between the factors of the attitude scale of university students perceiving scientists as social media phenomena during the Covid-19 pandemic period (Table 5), a positive and moderate correlation was found between the first and second factor of the scale (r=.669**; p<0.01), first and third factor (r=.644; p<0.01), first and fourth factor (r=.458**; p<0.01), and first and fifth factor of the scale (r=.605; p<0.01). A positive and moderate correlation was also determined between the second and third factor (r=.774; p<0.01), second and fourth factor (r=.667; p<0.01), second and fifth factor (r=.719; p<0.01), third and fourth factor (r=.688; p<0.01), third and fifth factor (r=.680; p<0.01) and fourth and fifth factor of the scale (r=.652; p<0.01).

Results regarding the scale's validity and reliability

Item-total correlation and 27% lower-upper group comparisons were made to determine the discrimination of the scale's items. According to Demirel (2003), the upper and lower group data are a measure of whether the items can be discriminated regarding the specification they are intended for. Thus, independent groups t-test was applied to determine the internal validity of the scale. First, test scores were sorted

from small to large and the 27% upper and lower parts of the group were calculated. The t-test results of the students' total scores in the 27% lower and 27% upper parts are compared in Table 6.

Table 6
T-test results regarding the scale's internal validity

Factor	Items	Groups	$\bar{x}$	Ss	t	p
Actuality of the shared post	I1	$Upper_{\%27}$	5.00	.000	35.894	.000**
		$Lower_{\%27}$	2.38	.780		
	I2	$Upper_{\%27}$	5.00	.000	20.371	.000**
		$Lower_{\%27}$	3.04	1.025		
	I3	$Upper_{\%27}$	4.97	.161	10.458	.000**
		$Lower_{\%27}$	3.69	1.298		
	I4	$Upper_{\%27}$	4.65	.776	12.466	.000**
		$Lower_{\%27}$	2.94	1.243		
	I5	$Upper_{\%27}$	4.50	.875	17.196	.000**
		$Lower_{\%27}$	2.42	.949		
Effect of the shared post on personal development	I6	$Upper_{\%27}$	4.11	1.054	8.991	.000**
		$Lower_{\%27}$	2.83	1.096		
	I7	$Upper_{\%27}$	4.06	1.091	8.514	.000**
		$Lower_{\%27}$	2.79	1.163		
	I8	$Upper_{\%27}$	3.79	1.215	8.014	.000**
		$Lower_{\%27}$	2.54	1.130		
	I9	$Upper_{\%27}$	3.74	1.364	7.756	.000**
		$Lower_{\%27}$	2.46	1.099		
	I10	$Upper_{\%27}$	4.38	.876	9.098	.000**
		$Lower_{\%27}$	3.11	1.196		
	I1	$Upper_{\%27}$	4.46	.864	12.917	.000**
		$Lower_{\%27}$	2.75	1.120		
Credibility of the shared post	I12	$Upper_{\%27}$	4.22	1.158	8.599	.000**
		$Lower_{\%27}$	2.88	1.198		
	I13	$Upper_{\%27}$	3.97	1.201	7.934	.000**
		$Lower_{\%27}$	2.74	1.153		
	I14	$Upper_{\%27}$	3.63	1.250	6.515	.000**
		$Lower_{\%27}$	2.58	1.189		
	I15	$Upper_{\%27}$	4.20	1.015	9.336	.000**
		$Lower_{\%27}$	2.89	1.111		
	I16	$Upper_{\%27}$	4.49	.895	11.522	.000**
		$Lower_{\%27}$	2.88	1.198		

Factor	Items	Groups	$\bar{x}$	Ss	t	p
	I17	Upper$_{\%27}$	3.93	1.173	9.879	.000**
		Lower$_{\%27}$	2.47	1.049		
	I18	Upper$_{\%27}$	3.66	1.233	6.830	.000**
		Lower$_{\%27}$	2.58	1.151		
	I19	Upper$_{\%27}$	3.18	1.530	6.379	.000**
		Lower$_{\%27}$	2.02	1.190		
	I20	Upper$_{\%27}$	3.48	1.477	6.615	.000**
Dissemination of the shared post		Lower$_{\%27}$	2.31	1.191		
	I21	Upper$_{\%27}$	3.94	1.305	7.001	.000**
		Lower$_{\%27}$	2.76	1.229		
	I22	Upper$_{\%27}$	3.54	1.332	6.942	.000**
		Lower$_{\%27}$	2.39	1.141		
	I23	Upper$_{\%27}$	3.18	1.647	2.586	.010*
		Lower$_{\%27}$	2.66	1.362		
	I24	Upper$_{\%27}$	3.39	1.386	5.934	.000**
		Lower$_{\%27}$	2.34	1.268		
Recognition of the scientist	I25	Upper$_{\%27}$	4.22	1.158	8.460	.000**
		Lower$_{\%27}$	2.95	1.112		
	I26	Upper$_{\%27}$	4.26	1.089	9.928	.000**
		Lower$_{\%27}$	2.80	1.138		
	I27	Upper%27	3.68	1.326	7.090	.000**
		Lower%27	2.46	1.270		

**p<0.01; *p<0.05

The data given in Table 6 show a statistical difference at p<0.01 level between the upper 27% group averages and lower27% group averages in favour of the upper group. This indicates that the items have high discrimination and internal validity. After achieving a high result for internal validity of the scale, the items were renumbered. It was determined that items 1-5 belong to the first factor, items 6-11 to the second factor, items 12-18 to the third factor, items 19-22 to the fourth factor and items 23-27 comprise the fifth factor. The characteristics of the criteria of the items involved in the relevant factor were taken into account while naming the factors of the scale.

The factors should be named based on the experience of the researcher and in accordance with the theoretical basis (Tezbaşaran, 1997).

The first factor, which consists of 5 items, measures the attitudes of university students towards the actuality of the posts shared by scientists. This factor was named *Actuality of the shared post* since it includes items such as: "During the (Covid-19) pandemic period, I thought the posts of the scientists I follow on social media contained up-to-date information on the event or a problem I encountered," and "During the (Covid-19) pandemic period, I became curious about up-to-date posts shared by scientists I followed while interpreting the matters at hand."

The second factor, which consists of 6 items, measures the attitudes of university students towards the effect of the posts shared by scientists on personal development. This factor was named *Effect of the shared post on personal development* since it includes items such as: "During the (Covid-19) pandemic period, I followed scientists on social media and this improved my ability to evaluate events from different perspectives," and "In the (Covid-19) pandemic period, my ability to question events has improved after I started following scientists on social media."

The third factor, which consists of 7 items, measures the attitudes of university students towards the credibility of the posts shared by scientists. This factor was named *Credibility of the shared post* since it includes items such as: "During the (Covid-19) pandemic period, the authenticity of the posts shared by scientists on social media affected my decision to follow them," and "During the (Covid-19) pandemic period, trusting personal thoughts of the scientists affected my decision to become their follower."

The fourth factor, which consists of 4 items, measures the attitudes of university students towards sharing scientists' posts on their social media profiles. This factor was named Dissemination of the shared post since it includes items such as: "During the (Covid-19) pandemic period, I shared the posts of scientists I followed on my social media profile," and "During the (Covid-19) pandemic period, it was important for me that other people also saw the posts shared by scientists I followed on social media."

The fifth factor, which consists of 5 items, measures the attitudes of university students towards the scientist's recognition. This factor was named *Recognition of the scientist* since it includes items such as: "During the (Covid-19) pandemic period, the scientists I followed on social media had to be well known and famous," and "During the (Covid-19) pandemic period, the number of followers of the scientists affected my decision to follow them on social media."

Reliability

Cronbach's alpha and test-retest coefficient were jointly calculated in order to determine the reliability of the *Scale of Students' Attitudes on Scientists as Phenomena on Social Media*. The reliability analysis and test-retest results were obtained by re-applying the scale to 155 students 3 weeks after the first application. Measurements with a reliability coefficient greater than or equal to 0.70 are considered reliable (Nunnally, 1978; Fraenkel et al., 2012). Furthermore, the combined reliability (CR) and average

variance extracted (AVE) values of the scale's factors were also calculated. Information obtained with the scale should achieve the same results in repeated measurements and should be error-free. The combined reliability (CR) is used to determine general reliability of multiple and heterogeneous but similar statements (Raykov, 1998). Average variance extracted (AVE) is obtained by dividing the sum of squares of factor loads by the number of items, and each factor structure is evaluated separately. The aim is to reveal that the expressions denoting the variables are related to each other and the factor they create. According to this analysis, the values of average variance extracted (AVE) of the items should be above 0.50, and the combined reliability values (CR) should be above 0.70 in order to prove the convergence validity of a scale (Fornell & Larcker, 1981). Cronbach's alpha reliability coefficient for the overall scale and its factors, test-retest, AVE and CR values are given in Table 7.

Table 7
AVE, CR, Cronbach's alpha and test-retest reliability values for the factors and the overall scale

Factors	Item No	Cronbach's Alpha	Test-Retest	AVE	CR
Actuality of the shared post	1,2,3,4,5	.833	.843	0.640	0.898
Effect of the shared post on personal development	6,7,8,9,10,11	.871	.890	0.536	0.871
Credibility of the shared post	12,13,14,15,16,17,18	.859	.858	0.526	0.884
Dissemination of the shared post	19,20,21,22	.732	.736	0.529	0.813
Recognition of the scientist	23,24,25,26,27	.697	.732	0.527	0.846
Overall scale		.957	.942		

Data given in Table 7 show that the Cronbach's alpha reliability coefficients of the scale's factors vary between 0.697 and 0.871, the Cronbach's alpha reliability coefficient of the entire scale is 0.957, and test-retest reliability coefficient ranges from 0.732 to 0.890 for the factors and 0.942 for the entire scale. The obtained results regarding the combined reliability (CR) and average variance extracted (AVE) of the factors were 0.640 and 0.898 for the first factor, 0.536 and 0.871 for the second factor, 0.526 and 0.884 for the third factor, 0.529 and 0.813 for the fourth factor, and 0.527 and 0.846 for the fifth factor, respectively. Findings of the scale items analysis are presented in Table 8.

Table 8
Arithmetic mean, standard deviation and correlation values for the scale's factors

Item	Actuality of the shared post	$\bar{x}$	Ss	r
I1	During the (Covid-19) pandemic period, I felt that the posts of the scientists I followed on social media contained up-to-date information on the event or a problem I encountered.	3.93	1.165	.852
I2	During the (Covid-19) pandemic period, I become curious about up-to-date posts shared by scientists I followed while interpreting the matters at hand.	4.11	1.021	.827
I3	During the (Covid-19) pandemic period, I thought that the posts of the scientists I followed on social media contained up-to-date information.	4.33	1.035	.663
I4	During the (Covid-19) pandemic period, the expectation of getting more up-to-date information about the events made me follow the scientists.	3.85	1.177	.768
I5	During the (Covid-19) pandemic period, the up-to-date posts of scientists I followed on social media were effective in satisfying my curiosity.	3.49	1.248	.769
Item	Effect of the shared post on personal development	$\bar{x}$	Ss	r
I6	During the (Covid-19) pandemic period, I followed the scientists on social media and this improved my ability to evaluate events from different perspectives.	3.47	1.155	.831
I7	During the (Covid-19) pandemic period, my ability to question events has improved after I started following scientists on social media.	3.43	1.188	.850
I8	During the (Covid-19) pandemic period, my world view began to change after I started following the scientists on social media.	3.13	1.217	.789
I9	With the (Covid-19) pandemic period, I improved my ability to express myself by starting to follow scientists on social media.	3.14	1.278	.800
I10	During the (Covid-19) pandemic period, I tried to apply the suggestions of the scientists I followed on social media in my daily life.	3.81	1.101	.643
I11	During the (Covid-19) pandemic period, I thought that following scientists on social media has affected me in a positive way.	3.68	1.168	.756
Item	Reliability of the shared post	$\bar{x}$	Ss	r
I12	During the (Covid-19) pandemic period, the reliability of the posts shared by the scientists on social media affected my decision to follow them.	3.53	1.252	.681
I13	During the (Covid-19) pandemic period, trusting the personal thoughts of the scientists affected my decision to become their follower.	3.36	1.196	.754
I14	During the (Covid-19) pandemic period, I considered I would get reliable information from the scientists on the matter at hand and this affected my decision to follow them on social media.	3.10	1.281	.647

Item	Actuality of the shared post	$\bar{x}$	Ss	r
I15	With the (Covid-19) pandemic period, the reliability of the posts shared by the scientists I started following on social media increased my curiosity about academic topics.	3.53	1.140	.800
I16	During the (Covid-19) pandemic period, I trusted the posts shared by the scientists I followed on social media due to their work discipline.	3.74	1.194	.769
I17	During the (Covid-19) pandemic period, the reliability of the posts shared by the scientists I followed on social media excited me.	3.25	1.240	.774
I18	During the (Covid-19) pandemic period, the feeling of trust in the posts of the scientists I followed on social media made me think like a scientist.	3.12	1.212	.740
Item	Dissemination of the shared post	$\bar{x}$	Ss	r
I19	During the (Covid-19) pandemic period, I shared the posts of the scientists I followed on my social media profile.	2.47	1.381	.796
I20	During the (Covid-19) pandemic period, it was important for me that other people also saw the posts shared by scientists I followed on social media.	2.87	1.353	.779
I21	During the (Covid-19) pandemic period, the reliability of the posts shared by the scientists I followed on social media influenced my decision to share them on my personal profile.	3.28	1.304	.710
I22	During the (Covid-19) pandemic period, I thought it was important for other people's development to view the posts of the scientist I followed on social media.	2.95	1.279	.688
Item	Recognition of the scientist	$\bar{x}$	Ss	r
I23	During the (Covid-19) pandemic period, the scientists I followed on social media had to be well known and famous.	2.93	1.442	.575
I24	During the (Covid-19) pandemic period, the number of followers of the scientists affected my decision to follow them on social media.	2.82	1.301	.709
I25	During the (Covid-19) pandemic period, the fact that printed and visual media featured the scientists affected my decision to follow them on social media.	3.60	1.173	.714
I26	During the (Covid-19) pandemic period, scientists' statements regarding actual developments in printed and visual media influenced my decision to follow them on social media.	3.62	1.199	.690
I27	With the (Covid-19) pandemic period, the like rates received by the posts shared by scientists on social media affected my decision to follow them.	3.11	1.310	.698

**p<0.01

According to the data in Table 8, which present the results of the Pearson moment product correlation analysis for all items of the scale, a statistically significant difference between the scale's factors and the total score was determined ($p<0.01$).

Results of confirmatory factor analysis

Confirmatory factor analysis (CFA) was applied to test whether the data collected from 205 university students in the second study group confirmed the structure of 27 items and five factors obtained as a result of exploratory factor analysis (EFA). Unlike factor analyses conducted by the traditional method, CFA is used to test the accuracy of the factor structure determined earlier by the researcher. In such analyses, it is assumed that multiple hidden (implicit) variables that are thought to be configured by the scale's items are explained by another hidden variable, therefore, the suitability of this assumption to the data set was tested (Schumacher & Lomax, 1996; Kline, 2005; Şimşek, 2007).

Regarding the fit values of the scale, they were calculated as x^2/sd=1.998, RMSEA=0.070, S-RMR=0.062, IFI=0.97, NNFI=0.97, NFI=0.95, CFI=0.97, GFI=0.92, AGFI=0.88, PNFI=0.83 and PGFI=0.67, after the modification process between S20 and S19, S26 and S25, S7 and S6, and S26 and S24. It is stated in the literature that the ratio between chi-square goodness of fit and degrees of freedom should be at most 3-4 or lower than these rates (Kline, 2005). The fact that the x2/sd is less than 3 in our study indicates that the factor structure is compatible. Furthermore, the diagram shows standardized values. RMSEA value of the study was 0.070, which corresponds to acceptable goodness of fit (Brown, 2006).

Considering other fit index values, a CFI value greater than or equal to 0.95 indicates excellent fit (Thompson, 2004). In addition, NFI and NNFI values greater than or equal to 0.95 indicate excellent goodness of fit (Sümer, 2000). GFI and AGFI index values equal to 1 indicate excellent fit (Hooper et al., 2008). Acceptable and excellent values of the calculated fit indices in the CFA reveal the adequacy of the tested model, as well as other results obtained in this regard shown in Table 9.

Table 9
Reference interval table for confirmatory factor analysis

Fit Indices	Excellent Fit	Acceptable Fit	Model	Result
χ2/df	0≤ χ2/df ≤2	2≤ χ2/df ≤3	1.998	Excellent Fit
RMSEA	0≤ RMSEA ≤0.05	0.05≤ RMSEA ≤0.08	0.070	Acceptable Fit
S-RMR	0≤ S-RMR ≤0.05	0.05≤ S-RMR ≤0.10	0.062	Acceptable Fit
IFI	0.95≤ IFI ≤1.00	0.90≤ IFI ≤0.95	0.97	Excellent Fit
NNFI	0.95≤ NNFI ≤1.00	0.90≤ NNFI ≤0.95	0.97	Excellent Fit
NFI	0.95≤NNFI≤1.00	0.90≤NNFI≤0,95	0.95	Excellent Fit
CFI	0.95≤ CFI ≤1.00	0.90≤ CFI ≤0.95	0.97	Excellent Fit
GFI	0.95≤ GFI ≤1.00	0.90≤ GFI ≤0.95	0.92	Acceptable Fit
AGFI	0.90≤ AGFI ≤1.00	0.85≤ AGFI ≤0.90	0.88	Acceptable Fit
PNFI	0.95≤ AGFI ≤1.00	0.50≤ AGFI ≤0.95	0.83	Acceptable Fit
PGFI	0.95≤ AGFI ≤1.00	0.50≤ AGFI ≤0.95	0.67	Acceptable Fit

Confidence interval with 90% = (0.062, 0.078) for χ^2 = 619.64 sd = 310 RMSEA.

Regarding values obtained for the five-factor model in Table 10, it was determined that t-test values ranged between 7.60 and 9.51 for the first factor of the scale, between 8.78 and 9.84 for the second factor, between 8.76 and 9.57 for the third factor, between 8.66 and 9.54 for the fourth factor, and between 7.79 and 9.94 for the fifth factor. If the t value is above 1.96, it is significant at a level of 0.05, but if it is above 2.56, it is significant at a level of 0.01 (Schumacker & Lomax, 2010). Accordingly, all t values obtained from CFA were found to be significant at the level of 0.01. If there is an insignificant t value found as a result of the analysis, the items related to this t value should be removed from the model (Byrne, 2010). In short, t values obtained from CFA confirm that the number of participants in the study is sufficient for factor analysis and it was determined that there was no item to be removed from the model.

Table 10
T values of the scale obtained from CFA

Factor	Item No	t
Actuality of the shared post	I1	7.60**
	I2	7.86**
	I3	9.51**
	I3	8.66**
	I5	8.46**
Effect of the shared post on personal development	I6	9.00**
	I7	8.78**
	I8	9.33**
	I9	8.90**
	I10	9.60**
	I11	9.84**
Credibility of the shared post	I12	9.52**
	I13	9.02**
	I14	9.57**
	I15	8.76**
	I16	9.28**
	I17	9.06**
	I18	9.03**
Dissemination of the shared post	I19	8.68**
	I20	9.54**
	I21	8.66**
	I22	9.21**
Recognition of the scientist	I23	9.94**
	I24	9.40**
	I25	8.88**
	I26	7.79**
	I27	9.18**

Factor loads of the five-factor model obtained as a result of CFA are available in Figure 1. As can be seen in Figure 1, the factors loads vary between 0.55 and 0.80 for the first factor of the scale, between 0.59 and 0.75 for the second factor, between 0.60 and 0.76 for the third factor, between 0.50 and 0.67 for the fourth factor, and between 0.33 and 0.70 for the fifth factor.

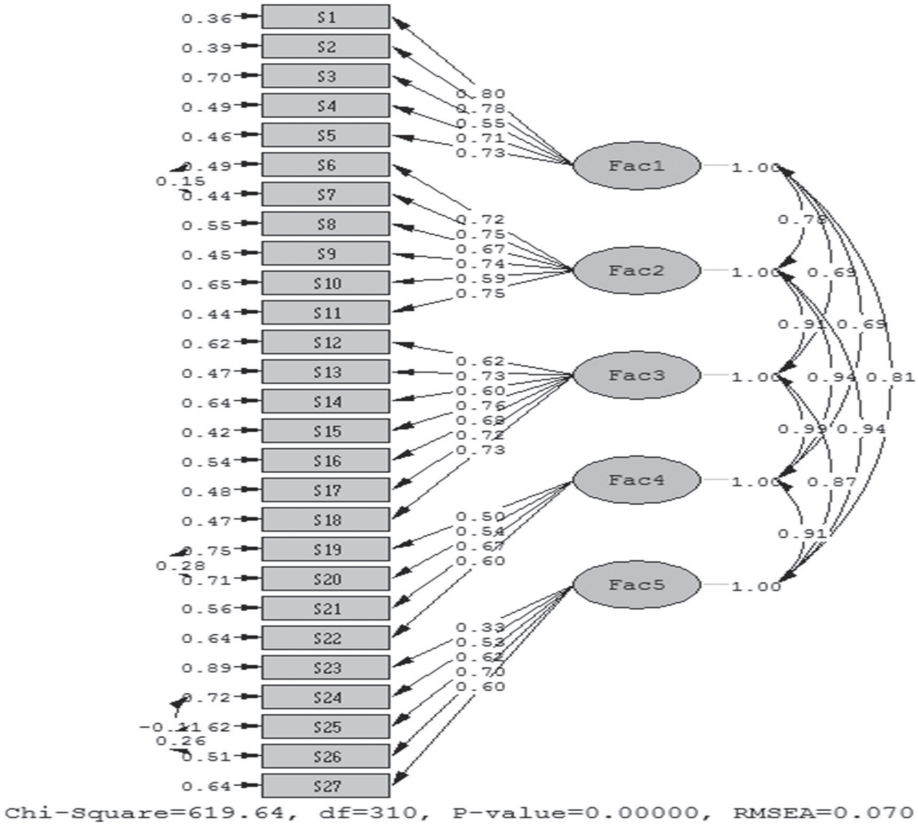

Figure 1. Scale-related measurement model.

Discussion and conclusion

The Scale of Students' Attitudes on Scientists as Phenomena on Social Media was created as a 5-point Likert scale with 27 items and 5 factors. The first factor of the scale, Actuality of the shared post, consists of 5 items (1-5); the second factor, Effect of the shared post on personal development, consists of 6 items (6-11); the third factor, Credibility of the shared post, consists of 7 items (12-18); the fourth factor, Dissemination of the shared post, consists of 4 items (19-22); and lastly, the fifth factor, Recognition of the scientist, consists of 5 items (23-27). The Cronbach's alpha reliability coefficient of the scale was found to be 0.957, and the reliability coefficients of the factors was calculated as 0.833, 0871, 0.859, 0.732 and 0.697, respectively. The test-retest reliability

coefficient was calculated as 0.942 for the overall scale and 0.843, 0.890, 0.858, 0.736 and 0.702 for the factors, respectively. In addition, the calculated AVE and CR values of the factors were 0.640 and 0.898 for the first factor of the scale, 0.536 and 0.871 for the second factor, 0.526 and 0.884 for the third factor, 0.529 and 0.813 for the fourth factor and 0.527 and 0.846 for the fifth factor, respectively. In the confirmatory factor analysis, the following fit index values were calculated: x^2/sd=1.998, RMSEA=0.070, S-RMR=0.062, IFI=0.97, NNFI=0.97, NFI=0.95, CFI=0.97, GFI=0.92, AGFI=0.88, PNFI=0.83 and PGFI=0.67. These values were determined to be perfectly adaptable and acceptable. The formula (n-1)/n was used so that the range applied to each level in the scoring process of the scale can be equally spaced, and the calculated score range at each level was 0.80. In this way, the values referring to the response of the participant were determined as follows: 1.00-1.80 for *Strongly disagree*, 1.81-2.60 for *Disagree*, 2.61-3.40 for *Undecided*, 3.41-4.20 for *Agree* and 4.21-5.00 for *Strongly agree*. The lowest score on the scale is 27, while the highest score is 135.

As the score of the relevant factor in the scale increases, the attitudes of individuals towards the related factor improve. It is possible to determine the attitudes of university students towards scientists as social media phenomena by dividing the total score obtained from the scale by the number of items or dividing the sum of items in the factors by the number of items in the relevant factor.

In addition, if the mean score obtained from the overall scale is in range between 1 and 2.59, it shows a negative attitude; if it is in range between 2.60 and 3.40, it refers to a moderate attitude; and lastly, if it is in range between 3.40 and 5, it denotes students with a positive attitude.

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Razvijanje Skale stavova sveučilišnih studenata o znanstvenicima kao fenomenima na društvenim mrežama tijekom pandemije koronavirusa 2020. i 2021. godine

Sažetak

Cilj ovoga istraživanja bio je razviti mjerni instrument za utvrđivanje stavova sveučilišnih studenata koji percipiraju znanstvenike kao fenomen na društvenim mrežama tijekom perioda pandemije koronavirusa. Uzorak istraživanja obuhvatio je 780 studenata koji su u to vrijeme studirali na različitim odsjecima i programima sveučilišta u Turskoj. U istraživanju je razvijena Skala fenomena znanstvenika na društvenim mrežama sa strukturom petostupanjske Likertove skale s 27 čestica i 5 faktora: Aktualnost podijeljene objave, Utjecaj objave na osobni razvoj, Pouzdanost objave, Dijeljenje objave i Priznatost znanstvenika. S obzirom na cjelokupnu pouzdanost skale izračunat je Cronbachov alpha koeficijent pouzdanosti (0,957) i koeficijent pouzdanosti testa-ponovljenoga testa (0,942). Primjenom konfirmativne faktorske analize izračunati su sljedeći indeksi pristajanja: $x^2/sd = 1,998$, *RMSEA = 0,070, S-RMR = 0,062, IFI = 0,97, NNFI = 0,97, NFI = 0,95, CFI = 0,97, GFI = 0,92, AGFI = 0,88, PNFI = 0,83 i PGFI = 0,67. Vrijednosti indeksa pristajanja modela smatraju se u potpunosti prilagodljivim i prihvatljivim.*

Ključne riječi: *COVID-19; društvene mreže; fenomen; pandemija; sveučilišni student.*

Uvod

U današnje vrijeme internet i društvene mreže omogućavaju brzo širenje informacija i uzrokuju veliku promjenu u međuljudskoj komunikaciji. Dvadesetprvo stoljeće je vrijeme prelaženja granica u kojemu internet spaja ljude kroz globalne mreže, vrijeme novoga doba u kojemu tehnološki alati povezuju ljude i povećavaju pristup informacijama (Castells i Cardoso, 2006; Warschauer, 2009). Sukladno tome, širenje interneta utjecalo je na pojavu interesa za različite discipline društvenih znanosti, postavljajući pitanje o načinu na koji će nova tehnologija utjecati na društvenu dinamiku (Wellman, 2002).

Vrijeme provedeno na internetu uvelike se odnosi na društvene mreže koje većinom koriste ljudi u dobi od 18 do 34 godine (Ryan, 2016). Mnoge mrežne stranice i aplikacije produkti su razdoblja Web 2.0 (Laughey, 2010). Društvena mreža je platforma zasnovana na tehnologiji koja uključuje internetske programe, tj. aplikacije koje korisnicima omogućuje stvaranje i izmjenu sadržaja (Kaplan i Haenlein, 2010). Osim toga, društvena mreža je višeslojni model komunikacije u kojem korisnici ne proizvode samo sadržaj, već su u stalnoj međusobnoj interakciji na raznim platformama (Çölekçi i Başol, 2019), što otkriva razne oblike interakcije između korisnika (Hansen i sur., 2011) i stvara kolektivnu mrežnu kulturu kojoj je pristup omogućen putem platformi (Van Dijk, 2013) te omogućuje prenošenje poruka kroz *online* društvene interakcije upotrebom mrežne tehnologije (Parker, 2010). Visoka razina i pristupačnost komunikacijske tehnologije omogućuju ljudima da lako utječu na druge putem raznih grupa (Blossom, 2009). Društvene su mreže najbrže rastuća tehnologija u kontekstu komunikacijskih tehnologija, sa sve većom globalnom stopom posjedovanja i upotrebe tehnoloških komunikacijskih alata (Kang i Schuett, 2013). Mrežne stranice društvenih medija postale su vrlo popularne nakon pojave Web 2.0 i napretka u informacijsko-komunikacijskoj tehnologiji (Hajli, 2015). Najviše korištene stranice društvenih mreža su *Facebook*, *Youtube*, *Whatsapp*, *Twitter*, *Messenger*, *Weixin/WeChat* i *Instagram* (Statista, 2020). U posljednje vrijeme sudjelovanje na stranicama društvenih mreža među tinejdžerima i mladim odraslima značajno se povećalo (Li, 2007). Mladi ljudi mogu biti pod utjecajem kulturnih promjena u društvu, ali se na te promjene mogu brzo naviknuti (Şahin i Cem, 2005). Korištenje društvenih mreža uobičajeno je među sveučilišnim studentima zbog koristi koje pružaju: omogućuju studentima promjenu profila i besplatne su, lako dostupne i lagane za upotrebu (Haythornthwaite, 2005; Chiou i Cheng, 2013) te predstavljaju društveno okruženje u kojemu studenti, kao i znanstvenici, mogu dijeliti razmišljanja i sudjelovati u društvenim mrežama te biti u međusobnoj interakciji u stvarnom vremenu (Chana i Dicianno, 2011). Osim toga, korisnici aplikacija društvenih mreža imaju mogućnost komunicirati s prijateljima i dijeliti fotografije, videa i mišljenja. Te aplikacije omogućuju korisnicima pristup informacijama o drugim korisnicima u obimu koji dozvoljavaju njihovi profili (Boyd i Ellison, 2007). Zahvaljujući društvenim mrežama poruke i razmišljanja današnjih vođa brzo se i lako šire i utječu na mišljenja, stavove, odluke i ponašanja njihovih sljedbenika, te dopiru do raznih ciljanih skupina na mnoge načine (Veirmen i sur., 2017; Brown i Fiorella, 2013). Društveni mediji preoblikuju tradicionalne odnose između medija i publike u uzajamne i interaktivne (Amelina i Zhu, 2016). S rastućom upotrebom platformi društvenih mreža, raste i svijesti o konceptu fenomena, a svaka platforma društvenih medija stvara vlastite fenomene na osnovi svojih karakteristika i sadržaja. Sugestije i objave koje dijele fenomeni smatraju se važnima jer osobe koje se identificira kao fenomene imaju dodatno znanje o specifičnom proizvodu ili situaciji (Armağan i Doğaner, 2018). Zajedno s činjenicom da društvene mreže daju korisnicima priliku stvaranja i dijeljenja sadržaja, svjedočimo pojavi fenomena na tim mrežama, tj. osoba koje slijedi veliki broj korisnika (Hajli, 2013). Koncept fenomena društvenih

mreža odnosi se na pojedince koji privlače pažnju sadržajem koji stvaraju, tj. objavljuju na stranicama društvenih mreža, poput *Instagrama, Facebooka, Twittera*, *Vinea* i *Snapchata* (Marwick i Boyd, 2011). Slavne osobe koje odražavaju vrijednosti suvremenoga društva imaju moć uvjeravanja koja može utjecati na ideje i preferencije (Kim i sur., 2014). Fenomeni stalno dijele objave od interesa za njihove sljedbenike i pažljivo upravljaju svojim računima na društvenim mrežama, s ciljem povećavanja broja sljedbenika i zadržavanja njihovoga divljenja (Marwick i Boyd, 2011). Broj sljedbenika ključni je kriterij za utvrđivanje učinkovitosti fenomena na društvenim medijima (Chen, 2017). Fenomeni na društvenim mrežama mogu biti javne figure, politički vođe ili korisnici društvenih mreža koji komentiraju proizvod ili dijele svoja iskustva (Cha i sur., 2010). Ako se mišljenja i vrijednosti osoba koje objavljuju na društvenim mrežama podudaraju s onima primatelja, vjera u informacije na društvenim mrežama također se povećava sukladno tome (Metzger i sur., 2010). Ako je osoba koja dijeli informacije dobro poznati izvor, poput domaćega poznatog novinara, akademika ili istraživača, vjera čitatelja u istinitost vijesti također će rasti (Stroud i Lee, 2013). Korištenje društvenih mreža brzo je poraslo zbog pandemija koronavirusa, što pokazuje koliki je utjecaj pandemije bio širom svijeta. Ljudi su, uz tiskane medije i televizijske kanale, informacije dobivali putem platformi društvenih mreža. Prema izvješću koje je objavila platforma *Socialbakers* o pandemiji između 1. veljače i 21. ožujka 2020., tri najčešće korištene ključne riječi (hashtaga) na *Facebooku* i *Instagramu* bile su #koronavirus, #Covid19 i #Covid_19. Ti podatci, tj. najviše korištene ključne riječi pokazuju da se aktualnosti odražavaju na društvene mreže (https://www.socialbakers.com). Jedan od najvažnijih izvještaja *Adba Analyticsa* i časopisa *Brand New Age* ispitivao je odnos između društvenih mreža i koronavirusa od 21. siječnja do 11. ožujka 2020. godine. Objave i razgovori korisnika društvenih mreža o pandemiji evaluirani su ispitivanjem objava podijeljenih prvenstveno na *Twitteru*, *YouTubeu*, blogovima, informativnim mrežnim stranicama i forumima na raznim jezicima poput engleskoga, njemačkoag, japanskoga, ruskoga, portugalskoga, talijanskoga, španjolskoga, kineskoga, turskoga, farsija i arapskoga. Prema rezultatima izvješća broj objava o pandemiji koronavirusa podijeljenih širom svijeta od strane korisnika društvenih mreža prelazio je 275 milijuna. Na čelu je bio Japan s 41 272 779 objava, nakon čega slijede SAD (37 932 712), Kina (5 581 751) i Italija (3 597 707). U Turskoj je broj takvih objava na društvenim mrežama 6 506 597 (https://www.cybermagonline.com/koronavirus-sosyal-medyaya-nasil-yansidi). Prema izvještaju koji je objavio *Global Web Index* u travnju 2020., uz sudjelovanje 4000 korisnika iz SAD-a i Engleske u vezi s korištenjem društvenih mreža raznih generacija tijekom pandemijskoga perioda, ustanovljeno je da generacija Z (dobi 16-23 godine) intenzivno koristi *online* videokanale poput *YouTubea*, *Tiktoka*, *Instagrama* i *Twittera* te da su članovi te generacije navikli dobivati aktualne vijesti i informacije na *online* platformama. Kao i u generaciji Z, upotreba *online* videokanala poput *YouTubea* i *Netflixa* generacije Y (24-37 godina starosti; *milenijalci*) također je vrlo visoka. U isto vrijeme, za razliku od generacije Z, iako je upotreba *Twittera* i *Instagrama* među članovima generacije Y visoka, oni također koriste društvene mreže za zabavu

i pronalaženje informacija o aktualnim pitanjima te praćenje vijesti. Generacija X (38-56 godina starosti) prati tradicionalne tiskane medije i televizijske kanale uz društvene mreže poput *YouTubea*. Naposljetku, *baby boom* generacija (dobi 57-64 godine) ne slijedi *online* platforme, kao što je bilo očekivano i nastavlja s navikom gledanja televizije (https://www.visualcapitalist.com/media-consumption-covid-19/). Rezultati našega istraživanja pokazuju da su posebno članovi generacija Z i Y intenzivno koristili društvene medije, ne samo za zabavu već i kao izvor informiranja tijekom pandemijskoga perioda. S obzirom na to da su znanstvenici pouzdan izvor informacija, a njihovi stavovi i mišljenja predstavljaju važan izvor informacija o pandemiji, stopa praćenja znanstvenika na društvenim mrežama također je porasla. S obzirom na utjecaj društvenih mreža u današnjem svijetu, možemo zaključiti da ljudi internaliziraju razmišljanja i objave pojedinaca koje smatraju fenomenima i da na njih utječu misli i stavovi fenomena prilikom donošenja odluka o događajima i situacijama koje slijede. Ovo istraživanje nastojalo je izmjeriti stavove sveučilišnih studenata, koji pripadaju y i z generaciji, o njihovoj percepciji znanstvenika kao fenomena na društvenim mrežama tijekom perioda pandemije koronavirusa.

S tim ciljem učinjen je pregled mjernih instrumenata u literaturi za mjerenje stavova pojedinaca o fenomenima društvenih mreža. Pregledom literature pronađeni su sljedeći instrumenti: Skala Facebook strasti Valleranda i suradnika (2003), koja se sastoji od 17 čestica i tri faktora (strast, harmonija i opsesivnost); Skala ovisnosti o televizijskim programima koju su razvili Russell i suradnici (2004), koja se sastoji od 16 čestica i faktora poput bijega, mode, oponašanja, modeliranja, želje i posjedovanja određenih stvari; Skala snage Facebooka koju su razvili Ross i suradnici (2009), s četiri faktora (trajnost, dosada, prekomjerna upotreba i samoizričaj); Skala afiniteta za društvene mreže koju su razvili Gerlich i suradnici (2010), od 13 čestica i tri faktora (upotreba vrijednosti, zajednički interesi i upotreba u poslu i organizacijaama); Bergen skala ovisnosti o Facebooku koju su razvili Andreassen i suradnici (2012) kako bi evaluirali razinu ovisnosti o Facebooku, a koja sadrži šest faktora (isticanje, tolerancija, promjena raspoloženja, ponavljanje, povlačenje i sukob); Skala ovisnosti o društvenim mrežama koju su razvili Ünal i Deniz (2015), od 41 čestice i četiri faktora (zanimanje, promjena raspoloženja, ponavljanje i sukob); Skala upotrebe i potrebe za društvenim mrežama koju su razvili Ali i suradnici (2020), od 18 čestica i pet faktora (kognitivne potrebe, potrebe za razonodom, emocionalne potrebe, potrebe za osobnom prilagodbom i potrebe za društvenom prilagodbom); Skala ovisnosti o društvenim mrežama koju je razvio Şahin (2018), koja obuhvaća 29 čestica i četiri faktora (virtualna tolerancija, virtualna komunikacija, virtualni problem i virtualna informacija); Skala nemira društvenih mreža koju je razvio Fung (2019), s devet čestica i dva faktora i Skala ovisnosti adolescenata o društvenim mrežama koju su razvili Orbatu i suradnici(2020), a koja obuhvaća 13 čestica i tri faktora (odabir virtualnoga života, opadanje funkcionalnosti i virtualno zadovoljstvo).

S obzirom na pregled relevantne literature zaključeno je da ne postoji mjerni instrument za mjerenje stavova pojedinaca o percepciji znanstvenika kao fenomena

društvenih mreža. Stoga ova studija istražuje ovo pitanje s ciljem popunjavanja postojeće praznine u literaturi.

Metoda

Ovo istraživanje provedeno je 2020. godine u Turskoj, s ispitanicima koji su odabrani metodom nasumičnoga uzorkovanja. Model probira korišten u ovom istraživanju uključuje probir za cijelu skupinu, populaciju ili uzorak kako bi se dobili opći podatci o cjelokupnoj populaciji (Karasar, 2000).

Uzorak

Na početku, u fazi razvoja skale, za eksplorativnu faktorsku analizu sakupljeni su *online* podatci od 420 studenata različitih demografskih karakteristika, koji su studirali na sveučilištima smještenim u raznim dijelovima Turske. Dodatni podatci sakupljeni su od 205 studenata kako bi se provela konfirmativna faktorska analiza prve razine za skalu dobivenu eksplorativnom faktorskom analizom. Naposljetku, sakupljeni su podatci od 155 sveučilišnih studenata, tri tjedna nakon primjene, kako bi se izračunao test/ponovljeni test koeficijent pouzdanosti skale. Uzorak istraživanja na kojemu je skala razvijena stoga je uključivao 780 studenata raznih studijskih programa na sveučilištima u različitim dijelovima Turske. Vrijednosti postotka (%) i frekvencija (f) demografskih varijabli za studente koji su sudjelovali u istraživanju prikazani su u Tablici 1.

Tablica 1

U Tablici 1 prikazane su vrijednosti frekvencija (f) i postotci (%) za sveučilišne studente, sudionike istraživanja, s ciljem utvrđivanja koeficijenta pouzdanosti na testu i ponovnom testu eksplorativnom i konfirmativnom faktorskom analizom.

Razvoj skale

Proces razvoja Skale stavova o znanstvenicima kao fenomenu društvenih mreža, dizajniranoj kako bi se utvrdile razine stavova sveučilišnih studenata o znanstvenicima kao fenomenima tijekom COVID-19 pandemije, obuhvaćao je sljedeće korake: (i) pregled literature i stvaranje grupe čestica, (ii) osiguravanje stručnoga mišljenja, (iii) *item-total* korelacije, (iv) razlikovanje čestica, (v) eksplorativnu faktorsku analizu, (vi) analizu unutarnje pouzdanosti putem Cronbachova alpha koeficijenta i analize test/ponovljeni test pouzdanosti, (vii) ispitivanje korelacija između poddimenzija i (viii) konfirmativnu faktorsku analizu prve razine.

Pregled literature i stvaranje grupe čestica

U fazi kreiranja čestica prvo su intervjuirani stručnjaci u polju društvenih mreža. Nakon toga stvorena je zaliha od 33 čestice putem istraživanja nacionalnih i međunarodnih publikacija i objavljenih intervjua sa stručnjacima o istraživačkoj temi u tiskanim i vizualnim medijima.

Stručno mišljenje

Obrazac skale s 33 čestice predstavljen je četirima akademskim stručnjacima u polju društvenih mreža, koji su informirani o predmetu istraživanja, kako bi se dobili njihove komentare. Sukladno preporukama stručnjaka, izraz „čovjek koji se bavi znanošću" u česticama skale promijenjen je u „znanstvenik". Kako bi se utvrdila održivost čestica skale sa sveučilišnim studentima, njih 15 ispunilo je obrazac i ukazalo na teško razumljiva mjesta, a na osnovi toga učinjene su revizije. Nakon toga pripremljen je probni obrazac s 33 čestice.

Analiza čestica

Rezultati eksplorativne faktorske analize

Prije početka eksplorativne faktorske analize provedena je klasifikacija podatka. Također se provjeravalo ima li među podatcima ekstremnih ili netočnih podataka, čime je ustanovljeno da deset obrazaca nije točno, pa oni nisu uključeni u istraživanje. Osim toga, izračunata je Mahalanobisova udaljenost tijekom utvrđivanja krajnjih vrijednosti, i dva su upitnika s ekstremnim vrijednostima isključena iz istraživanja. Mahalanobisova vrijednost iznad 7 smatra se ekstremnom (Feild, 2005). Nakon toga ispitani su koeficijenti asimetrije i spljoštenosti kako bi se utvrdilo jesu li dobiveni podatci normalno distribuirani. Ustanovljeno je da dobivene vrijednosti asimetrije i spljoštenosti variraju između -0,457 i 0,420, te da podatci pokazuju normalnu distribuciju. Smatra se da su podatci normalno distribuirani ako su vrijednosti spljoštenosti i asimetrije između -1,5 i +1,5 (Tabachnick i Fidell, 2013).

Ukupna vrijednost korelacije za 33 čestice skale ispitana je prije izvođenja eksplorativne faktorske analize. Čestice skale s ukupnom vrijednosti kvadrata od 0,40 i više ostavljene su na skali. Vrijednost zasićenja faktora skale s 33 čestice iznosila je 0,40 i više. Vrijednosti ukupnih korelacija prikazane su u Tablici 2.

Tablica 2

Podatci u Tablici 2 pokazuju da vrijednost ukupnih korelacija 33 čestice skale iznosi između 0,764 i 0,436, a ta razlika je statistički značajna ($p < 0,01$). Faktorska analiza primijenjena je na 33 čestice, a utvrđena je KMO vrijednost skale i proveden Bartlettov test sferičnosti. Eksplorativna faktorska analiza provedena je s 420 sveučilišnih studenata. Preporučeni broj sudionika u uzorku trebao bi biti barem pet puta veći od broja čestica u faktorskoj analizi (Child, 2006), stoga je broj od 420 sveučilišnih studenata dovoljan za primjenu eksplorativne faktorske analize. Rezultati KMO-a i Bartlettova testa sferičnosti prikazani su u Tablici 3.

Tablica 3

Podatci u Tablici 3 pokazuju da su dobivene vrijednosti Kaiser-Meyer-Olkinova testa 0,90 i više, što je odlično. KMO vrijednost upotrebljava se kako bi se testirala primjerenost distribucije za faktorsku analizu. Vrijednosti 0,60 i više znače da je

uzorak dovoljno dobar za izvođenje eksplorativne faktorske analize (Hutcheson i Sofronio, 1999; Büyüköztürk, 2007). Rezultati Bartlettova testa sferičnosti za ovu skalu su značajni [χ^2 = 8172,713/ sd = 528; p < 0,000]. Značajnost Bartlettova testa sferičnosti znači da su mjerene varijable multivarijantne (Thompson, 2004). Faktori dobiveni analizom glavnih komponenti ove skale i zasićenja čestica u tim faktorima prikazani su u Tablici 4.

Tablica 4

Prema podatcima u Tablici 4 vidljivo je da se 19. i 22. čestica preklapaju s 2. i 3 faktorom, 26. čestica preklapa se s 1. i 2. faktorom, 23. čestica s 2. i 3. faktorom i 30. čestica s 3. i 4. faktorom. Nakon provedene faktorske analize te su čestice isključene jer je razlika između njih manja od 1. Nakon uklanjanja navedenih faktora provedena je faktorska analiza i dobiveno je pet faktora sa svojstvenim vrijednostima višim od 1. Konačna struktura skale stoga ima 5 faktora. U ovom istraživanju određena je svojstvena vrijednost 1,00, a identificirano je 5 faktora sa svojstvenom vrijednosti višom od 1. U faktorskoj analizi važnim se faktorima smatraju oni sa svojstvenom vrijednosti višom ili jednakom 1 (Büyüköztürk, 2002). Utvrđeno je da su vrijednosti zasićenosti čestica (2, 3, 25, 33 i 1) prvoga faktora varirale između 0,737 i 0,896, a ovaj faktor imao je svojstvenu vrijednost 4,911, što objašnjava 14,882 % ukupne varijance. Vrijednosti zasićenja čestica (29, 28, 27, 21, 12 i 7) drugog faktora bile su u rasponu od 0,595 do 0,854, a ovaj faktor ima svojstvenu vrijednost 4,892, što objašnjava 14,826 % ukupne varijance. Vrijednosti zasićenja čestica (16, 20, 9, 18, 17, 14 i 13) trećega faktora variraju između 0,563 i 0,827, sa svojstvenom vrijednosti 4.650 koja objašnjava 14.091 % ukupne varijance. Vrijednosti zasićenja čestica (10, 24, 15 i 6) četvrtoga faktora su između 0,532 i 0,844, stoga ovaj faktor ima svojstvenu vrijednost 3,373 i objašnjava 10,222 % ukupne varijance. Naposljetku, vrijednosti zasićenja čestica (8, 4, 32, 31 i 5) petoga faktora variraju između 0,610 i 0,854, sa svojstvenom vrijednosti 1,982, što objašnjava 6,005 % ukupne varijance. Izračunata stopa ukupne varijance skale iznosi 60,026 %. Stope varijance u rasponu od 40 % do 60 % u faktorskoj analizi smatraju se idealnima (Kline, 1994). Vrijednosti korelacije za navedenih pet faktora prikazane su u Tablici 5.

Tablica 5

S obzirom na odnos između faktora Skale stavova sveučilišnih studenata koji doživljavaju znanstvenike kao fenomene društvenih mreža tijekom pandemijskog perioda (Tablica 5), utvrđena je pozitivna umjerena korelacija između prvoga i drugoga faktora skale (r = ,669**; p < 0,01), prvoga i trećega faktora (r = ,644; p < 0,01), prvoga i četvrtoga faktora (r = ,458**; p < 0,01) i prvoga i petoga faktora skale (r = ,605; p < 0,01). Pozitivna umjerena korelacija također je nađena između drugoga i trećega faktora (r = ,774; p < 0,01), drugoga i četvrtoga faktora (r = ,667; p < 0,01), drugoga i petoga faktora (r = ,719; p < 0,01), trećega i četvrtoga faktora (r = ,688; p < 0,01), trećega i petoga faktora (r = ,680; p < 0,01) i četvrtoga i petoga faktora skale (r = ,652; p < 0,01).

Rezultati valjanosti i pouzdanosti skale

Izračunata je *item-total* korelacija i uspoređeno 27 % donje i gornje skupine kako bi se utvrdila diskriminativna valjanost čestica skale. Prema Demirelu (2003), gornja i donja skupina podataka mjera su razlikovanja čestica prema konstruktu za čije su mjerenje namijenjene. Stoga je primijenjen t-test za nezavisne uzorke kako bi se utvrdila unutarnja valjanost skale. Prvo su razvrstani rezultati testa, od niskih prema visokima, i izračunato je 27 % najviših i najnižih dijelova grupa. Rezultati t-testa ukupnih rezultata studenata u gornjih i donjih 27 % uspoređeni su u Tablici 6.

Table 6

Podatci prikazani u Tablici 6 pokazuju statistički značajnu razliku na razini $p < 0,01$ između prosjeka 27 % gornje skupine i 27 % donje skupine u korist gornje skupine. Navedeno pokazuje da čestice imaju visoku diskriminativnu i unutarnju valjanost. Nakon dobivanja visoko vrijednih rezultata za unutarnju valjanost skale, čestice su ponovo prebrojane i utvrđene su čestice 1, 2, 3, 4 i 5 u prvom faktoru; čestice 6, 7, 8, 9, 10 i 11 u drugom; čestice 12, 13, 14, 15, 16, 17 i 18 u trećem; čestice 19, 20, 21 i 22 u četvrtom i čestice 23, 24, 25, 26 i 27 u petom faktoru. Karakteristike kriterija čestica koje sačinjavaju određeni faktor uzete su u obzir prilikom imenovanja faktora skale.

Imena faktora skale trebaju se odrediti na osnovi iskustva istraživača, a u skladu s teorijskom osnovom istraživanja (Tezbaşaran, 1997).

Prvi faktor, koji se sastoji od 5 čestica, mjeri stavove sveučilišnih studenata o aktualnosti objava koje dijele znanstvenici. Prvi faktor je stoga imenovan Aktualnost podijeljene objave, jer uključuje čestice poput: „Smatram da su u razdoblju pandemije objave znanstvenika koje pratim na društvenim mrežama sadržavale najnovije informacije o događaju ili problemu s kojim sam se susretala;" i „Tijekom perioda pandemije Covid 19 postao sam znatiželjan o najnovijim objavama koje su dijelili znanstvenici koje pratim prilikom tumačenja aktualnih tema".

Drugi faktor koji se sastoji od 6 čestica i mjeri stavove sveučilišnih studenata prema utjecaju podijeljenih objava znanstvenika na osobni razvoj. Ovaj faktor je nazvan Utjecaj podijeljene objave na osobni razvoj jer uključuje čestice poput: „Tijekom pandemije koronavirusa slijedio sam znanstvenike na društvenim mrežama i to je poboljšalo moju sposobnost procjene događaja iz različitih perspektiva;" „U pandemijskom periodu moja sposobnost propitivanja događaja poboljšala se nakon što sam počela pratiti znanstvenike na društvenim mrežama".

Treći faktor, koji se sastoji od 7 čestica, mjeri stavove sveučilišnih studenata prema vjerodostojnosti objava znanstvenika. Ovaj faktor nazvan je Vjerodostojsnost podijeljenih objava jer uključuje sljedeće čestice: „Tijekom pandemije koronavirusa pouzdanost objava koje su podijelili znanstvenici na društvenim mrežama utjecala je na moju odluku da ih pratim na društvenim mrežama." i „Tijekom razdoblja pandemije povjerenje u objave znanstvenika na društvenim mrežama utjecalo je na moju odluku da ih pratim preko društvenih medija".

Četvrti faktor, koji se sastoji od četiri čestice, mjeri stavove sveučilišnih studenata prema dijeljenju objava znanstvenika na njihovim osobnim stranicama. Ovaj faktor je nazvan Dijeljenje objava znanstvenika jer uključuje sljedeće čestice: „Za vrijeme pandemije koronavirusa dijelila sam objave znanstvenika koje sam pratila na svojem profilu na društvenim mrežama;" i „Tijekom pandemije bilo mi je važno da i drugi ljudi vide objave znanstvenika koje sam pratila na društvenim mrežama".

Peti faktor, koji se sastoji od 5 čestica, mjeri stavove sveučilišnih studenata prema priznatosti znanstvenika. Ovaj faktor nosi naziv Priznatost znanstvenika jer uključuje čestice poput: „Za vrijeme razdoblja pandemije koronavirusa znanstvenici koje pratim na društvenim mrežama poznati su i slavni." i „Tijekom pandemije broj pratitelja znanstvenika utjecao je na moju odluku da ih pratim na društvenim mrežama".

Pouzdanost

Cronbachov alpha koeficijent i test i ponovljeni test primijenjeni su zajedno kako bi se izračunala pouzdanost Skale stavova o znanstvenicima kao fenomenima društvenih mreža. Analiza pouzdanosti i rezultati testa i ponovljenoga testa dobiveni su ponovnom primjenom skale sa 155 studenata tri tjedna nakon prve primjene. Vrijednosti koeficijenta pouzdanosti koje su veće ili jednake 0,70 smatraju se pouzdanima (Nunnally, 1978; Fraenkel i sur., 2012). Osim toga, izračunate su i vrijednosti kombinirane pouzdanosti (CR) i prosječne ekstrahirane varijance (AVE) skale. Informacije dobivene primjenom skale trebale bi polučiti iste rezultate u ponovnim mjerenjima i u njima ne bi trebalo biti greške. Kombinirana pouzdanost (CR) koristi se za utvrđivanje opće pouzdanosti višestrukih, heterogenih, ali sličnih tvrdnji (Raykov, 1998). Prosječna ekstrahirana varijanca (AVE) dobiva se dijeljenjem sume kvadrata zasićenja faktora brojem čestica i struktura svakog faktora evaluira se odvojeno. Cilj je utvrditi da su tvrdnje koje se odnose na varijable u međusobnoj vezi i u vezi s faktorom koji sačinjavaju. Prema toj analizi prosječna ekstrahirana varijanca (AVE) čestica trebaju biti iznad 0,50, a vrijednosti kombinirane pouzdanosti (CR) iznad 0,70 kako bi se postigla konvergentna valjanost skale (Fornell i Larcker, 1981). U Tablici 7 su prikazani Cronbachov alpha koeficijent skale i faktora skale te koeficijenti dobiveni kao rezultat testa i ponovljenoga testa i AVE i CR vrijednosti.

Table 7

Podatci u Tablici 7 pokazuju da Cronbachov alpha koeficijenti pouzdanosti faktora skale variraju između 0,697 i 0,871, Cronbachovov alpha koeficijent za cijelu skalu je 0,957, i koeficijent pouzdanosti testa/ponovljenoga testa u rasponu od 0,732 do 0,890 za faktore i 0,942 za cijelu skalu. Dobiveni rezultati Kombinirane pouzdanosti (CR) i prosječne ekstrahirane varijance (AVE) faktora skale su 0,640 i 0,898 za prvi faktor, 0,536 i 0,871 za drugi faktor, 0,526 i 0,884 za treći faktor, 0,529 i 0,813 za četvrti faktor i 0,527 i 0,846 za peti faktor, tim redom. Rezultati analize čestica skale prikazani su u Tablici 8.

Tablica 8
Vrijednosti aritmetičke sredine, standardne devijacije i korelacije faktora skale

Čestica	Aktualnost podijeljenih objava	$\bar{x}$	Ss	r
I1	Smatram da su objave znanstvenika koje pratim na društvenim mrežama tijekom pandemije koronavirusa sadržavale nove informacije o događajima ili problem s kojim se susrećem.	3,93	1,165	,852
I2	Za vrijeme pandemije koronavirusa zainteresirao sam se za objave koje su dijelili znanstvenici koje pratim dok sam pokušavao protumačiti aktualne događaje.	4,11	1,021	,827
I3	Smatram da su objave znanstvenika koje pratim na društvenim mrežama sadržavale najnovije informacije.	4,33	1,035	,663
I4	Želja za dobivanjem najnovijih informacija o zbivanjima tijekom pandemije razlog je zbog kojih pratim znanstvenike.	3,85	1,177	,768
I5	Najnovije objave znanstvenika koje pratim na društvenim mrežama zadovoljile su moju znatiželju.	3,49	1,248	,769
Čestica	Utjecaj podijeljene objave na osobni razvoj	$\bar{x}$	Ss	r
I6	Tijekom razdoblja pandemije pratila sam znanstvenike na društvenim mrežama i to je poboljšalo moju sposobnost da sagledam događaje iz različitih perspektive.	3,47	1,155	,831
I7	U periodu pandemije koronavirusa moja se sposobnost propitivanja događaja poboljšala nakon što sam počeo pratiti znanstvenike na društvenim mrežama.	3,43	1,188	,850
I8	Moj pogled na svijet počeo se mijenjati nakon što sam počeo pratiti znanstvenike na društvenim mrežama u pandemijskom periodu.	3,13	1,217	,789
I9	Kada sam počeo pratiti znanstvenike na društvenim mrežama u pandemijskom periodu, poboljšala se moja sposobnost izražavanja.	3,14	1,278	,800
I10	Pokušavala sam primijeniti prijedloge znanstvenika koje pratim na društvenim mrežama tijekom pandemije koronavirusa.	3,81	1,101	,643
I11	Smatram da je praćenje znanstvenika na društvenim mrežama za vrijeme pandemijskoga perioda na mene imalo pozitivan utjecaj.	3,68	1,168	,756
Čestica	Vjerodostojnost podijeljene objave	$\bar{x}$	Ss	r
I12	Pouzdanost objava koje su dijelili znanstvenici na društvenim mrežama tijekom pandemije utjecala je na moju odluku da ih pratim.	3,53	1,252	,681
I13	Vjera u osobna razmišljanja znanstvenika utjecala je na moju odluku da ih pratim na društvenim mrežama.	3,36	1,196	,754
I14	Smatrala sam da ću dobiti pouzdane informacije od znanstvenika o aktualnoj temi i to je utjecalo na moju odluku da ih pratim na društvenim mrežama za vrijeme pandemije.	3,10	1,281	,647
I15	Vjerodostojnost objava koje su dijelili znanstvenici koje sam počeo pratiti na društvenim mrežama povećala je moju znatiželju o akademskim pitanjima tijekom pandemije.	3,53	1,140	,800

I16	Tijekom pandemijskoga perioda vjerovao sam objavama znanstvenika koje pratim na društvenim mrežama zbog njihove radne discipline.	3,74	1,194	,769
I17	Za vrijeme pandemije koronavirusa uzbuđivala me vjerodostojnost objava znanstvenika koje pratim na društvenim mrežama.	3,25	1,240	,774
I18	U razdoblju pandemije koronavirusa vjera u objave znanstvenika koje pratim na društvenim mrežama učinila je da razmišljam kao znanstvenik.	3,12	1,212	,740
Čestica	Širenje objave	$\bar{x}$	Ss	r
I19	Za vrijeme pandemije koronavirusa dijelio sam objave znanstvenika koje pratim na vlastitom društvenom profilu.	2,47	1,381	,796
I20	Tijekom pandemijskoga perioda bilo mi je važno da i drugi ljudi vide objave koje su podijelili znanstvenici koje pratim na društvenim mrežama.	2,87	1,353	,779
I21	Vjerodostojnost objava znanstvenika koje pratim na društvenim mrežama utjecala je na to da ih dijelim na svojem profilu.	3,28	1,304	,710
I22	Tijekom pandemije koronavirusa smatrala sam da je važno da drugi ljudi vide objave znanstvenika koje pratim na društvenim mrežama zbog njihova razvoja.	2,95	1,279	,688
Čestica	Priznatost znanstvenika	$\bar{x}$	Ss	r
I23	Znanstvenici koje sam pratio na društvenim mrežama tijekom pandemije koronavirusa bili su općepoznati ili slavni.	2,93	1,442	,575
I24	Broj pratitelja koje su imali znanstvenici utjecao je na moju odluku da ih pratim na društvenim mrežama tijekom pandemije.	2,82	1,301	,709
I25	Pojavljivanje znanstvenika u tiskanim i vizualnim medijima tijekom pandemije utjecala je na moju odluku da ih pratim na društvenim mrežama.	3,60	1,173	,714
I26	Objave znanstvenika o razvoju događaja tijekom pandemije koronavirusa u tiskanim i vizualnim medijima utjecale su na moju odluku da ih pratim na društvenim mrežama.	3,62	1,199	,690
I27	Broj oznaka sviđanja koji su dobile objave znanstvenika na društvenim mrežama tijekom pandemije utjecao je na moju odluku da ih pratim.	3,11	1,310	,698

**p < 0,01

S obzirom na podatke prikazane u Tablici 8, na osnovi izračunatog Personova koeficijenta korelacije za sve čestice, utvrđena je statistički značajna razlika između faktora skale i ukupnoga rezultata ($p < 0.01$).

Rezultati konfirmativne faktorske analize

Konfirmativna faktorska analiza (CFA) provedena je kako bi se testiralo jesu li podatci sakupljeni od 205 sveučilišnih studenata u drugoj grupi istraživanja potvrdili strukturu 27 čestica i pet faktora dobivenih kao rezultat eksplorativne faktorske analize

(EFA). Za razliku od analiza provedenih tradicionalnim metodama, CFA se koristi za testiranje točnosti faktorske strukture koju je ustanovio istraživač. U takvim analizama pretpostavlja se da višestruke skrivene (implicitne) varijable, za koje se smatra da su konfigurirane česticama skale, objašnjava druga skrivena varijabla, pa je tako testirana primjerenost ove pretpostavke grupi podataka (Schumacher i Lomax, 1996; Kline, 2005; Şimşek, 2007).

Nakon izmjena procesa između čestica S20 i S19, S26 i S25, S7 i S6, i S26 i S24, izračunate su sljedeće vrijednosti indeksa pristajanja za ovu skalu: x^2/sd = 1,998, RMSEA = 0,070, S-RMR = 0,062, IFI = 0,97, NNFI = 0,97, NFI = 0,95, CFI = 0,97, GFI = 0,92, AGFI = 0,88, PNFI = 0,83 i PGFI = 0,67. U literaturi je navedeno da odnos između hi-kvadrat vrijednosti, kojom se mjeri valjanost pristajanja modela i stupnjeva slobode, treba biti najviše 3-4 ili niže (Kline, 2005). Činjenica da je omjer x2/sd manji od 3 u ovom istraživanju ukazuje na to da je faktorska struktura primjerena. Osim toga, dijagram pokazuje standardizirane vrijednosti. U ovome istraživanju utvrđena je RMSEA vrijednost 0,070, što odgovara prihvatljivom pristajanju modela (Brown, 2006).

S obzirom na ostale vrijednosti indeksa, vrijednost CFI veća ili jednaka 0,95 pokazuje odlično pristajanje (Thompson, 2004). Osim toga, NFI I NNFI vrijednosti veće ili jednake 0,95 pokazuju odlično pristajanje (Sümer, 2000). GFI i AGFI vrijednosti jednake 1 pokazuju odlično pristajanje (Hooper i sur., 2008). Dobivene prihvatljive, odlične vrijednosti indeksa pristajanja u CFA-u, kao i drugi rezultati prikazani u Tablici 9, pokazuju prikladnost testiranoga modela od pet faktora.

Tablica 9

S obzirom na vrijednosti modela od pet faktora prikazanih u Tablici 10, ustanovljeno je da su one u rasponu između 7,60 i 9,51 za prvi faktor skale, između 8,78 i 9,84 za drugi faktor, između 8,76 i 9,57 za treći faktor, između 8,66 i 9,54 za četvrti faktor i između 7,79 i 9,94 za peti faktor. Ako je t-vrijednost iznad 1,96, smatra se značajnom na razini p = 0,05, ali ako je iznad 2,56, značajna je na razini p = 0,01 (Schumacker i Lomax, 2010). Prema tome, sve t-vrijednosti dobivene konfirmativnom faktorskom analizom značajne su na razini 0,01. Ako je prilikom analize nađena t-vrijednost koja nije značajna, čestice povezane s tom t-vrijednosti trebaju se isključiti iz modela (Byrne, 2010). Ukratko, t-vrijednosti dobivene u konfirmativnoj faktorskoj analizi potvrđuju da je broj sudionika u istraživanju dovoljan za faktorsku analizu i ustanovljeno je da nema čestica koje se trebaju isključiti iz modela.

Tablica 10

Zasićenja faktora u modelu dobivena kao rezultat konfirmativne faktorske analize prikazana su na Slici 1. Kako što se može vidjeti iz spomenutoga prikaza, zasićenja faktora variraju između 0,55 i 0,80 za prvi faktor skale, između 0,59 i 0,75 za drugi faktor, između 0,60 i 0,76 za treći faktor, između 0,50 i 0,67 za četvrti faktor i između 0,33 i 0,70 za četvrti faktor.

Slika 1.

Zaključak i rasprava

Skala stavova o fenomenima na društvenim mrežama za znanstvenike razvijena je kao petostupanjska skala Likertova tipa s 27 čestica i 5 faktora. Prvi faktor skale je Aktualnost podijeljene objave i uključuje 5 čestica (1, 2, 3, 4, 5); drugi faktor, Utjecaj podijeljene objave na osobni razvoj uključuje 6 čestica (6, 7, 8, 9, 10, 11); treći faktor, Vjerodostojnost podijeljene objave sastoji se od 7 čestica (12, 13, 14, 15, 16, 17 i 18); četvrti faktor, tj. Dijeljenje objave sastoji se od 4 čestice (19, 20 ,21 i 22); i naposljetku, peti faktor, Priznatost znanstvenika sastoji se od 5 čestica (23, 24, 25, 26 i 27). Cronbachov alpha koeficijent pouzdanosti skale iznosi 0,957, a koeficijenti pouzdanosti faktora izračunati su kako slijedi: 0,833, 0871, 0,859, 0,732 i 0,697, već navedenim redoslijedom. Koeficijent pouzdanosti testa i ponovljenoga testa iznosi 0,942 za cijelu skalu i 0,843, 0,890, 0,858, 0,736 i 0,702 za faktore, navedenim redoslijedom. Osim toga, dobivene AVE i CR vrijednosti faktora su 0,640 i 0,898 za prvi faktor skale, 0,536 i 0,871 za drugi faktor, 0,526 i 0,884 za treći faktor, 0,529 i 0,813 za četvrti faktor i 0,527 i 0,846 za peti faktor. Dobiveni indeksi pristajanja u konfirmativnoj faktorskoj analizi su x2/sd = 1,998, RMSEA = 0,070, S-RMR = 0,062, IFI = 0,97, NNFI = 0,97, NFI = 0,95, CFI = 0,97, GFI = 0,92, AGFI = 0,88, PNFI = 0,83 i PGFI = 0,67, što je značilo da su ovi indeksi primjerenosti modela u potpunosti prihvatljivi. Formula (n-1)/n primijenjena je kako bi svaka razina u procesu bodovanja uslijedila s jednakim razmakom, a raspon rezultata svake razine iznosio je 0,80. Na taj su način određene vrijednosti koje se odnose na odgovore sudionika kako slijedi: 1.00 – 1,80 „izrazito neslaganje", 1,81 – 2,60 „neslaganje", 2,61 – 3,40 „neodlučnost", 3,41 – 4,20 „slaganje" i 4,21 – 5,00 „izrazito slaganje". Najniži mogući rezultat na skali je 27, a najviši 135.

S povećanjem rezultata za relevantne faktore na skali, poboljšavaju se i stavovi pojedinaca prema povezanim faktorima. Moguće je utvrditi stavove sveučilišnih studenata prema znanstvenicima kao fenomenima na društvenim mrežama dijeleći ukupni rezultat dobiven na skali s brojem čestica ili dijeljenjem zbroja čestica faktora brojem čestica relevantnoga faktora.

Osim toga, ako je srednji rezultat dobiven za cijelu skalu ili faktore s obzirom na stavove sveučilišnih studenta o znanstvenicima kao fenomenima društvenih mreža u rasponu od 1 do 2,59, ta vrijednost predstavlja negativan stav, raspon od 2,60 do 3,40 umjeren stav, a raspon od 3,40 do 5 predstavlja pozitivan stav studenata.