

## **The relationship between YouTube use and perceptions of social problems caused by fake news and deepfake in South Korea**

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### ***Abstract***

The current study investigates South Koreans' perceptions of social problems caused by fake news and deepfake. The data were obtained from the Korea Press Foundation's (KPF) annual survey of media audiences. Analyses of 1,218 respondents found that heavy YouTube users exposed to fake news were more likely than light users to be concerned about social polarization, social harm, and low credibility caused by fake news. In perceptions of social problems caused by deepfake, heavy YouTube content users appeared to speak up for deepfake regulation and victimization. The political liberals were more likely than the political conservatives concerned about political polarization caused by fake news on YouTube. The liberals contended regulation on deepfake more than did the conservatives. Implications of the results in the South Korean social media context were discussed.

*Keywords:* fake news, deepfake, YouTube, social polarization, political orientation

### **1. Introduction**

The transition from legacy journalism to networked news production by netizens has fostered a news media era of unsubstantiated rumors, hyper-information, misinformation, and disinformation (Quintanilha, Silva and Lapa, 2019). Disseminated information in the form of unidentified allegations becomes an element of fake news, which spreads faster, farther, and deeper than true news. Fake news consists of entirely fabricated and often partisan content (Pennycook, Cannon and Rand, 2018). To be considered fake news, at least one audience member should access the news to view and judge. Given the varying definitions of fake news, it

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can be defined broadly as any non-factual, misleading, false, fabricated, and unverifiable news viewed by audiences.

The illusory truth effect for fake news occurs when fluency via prior exposure to news media including news on social media happens (Pennycook et al., 2018). In other words, social media platforms help to incubate belief in false news stories. Only a small degree of potential plausibility in fake news is sufficient to increase perceived accuracy. The dissemination of fake news via social media can be explained by the frame of spreadable media in which online expression initiates, sustains, and expands the media spectacle. The spreadable nature of YouTube as a video-centered platform perpetuates partisan communication, polarizing views, and vitriolic opinions (Mihailidis and Viotty, 2017).

Despite the past research on fake news (e.g., Amazeen, Vargo and Hopp, 2019; Van Duyn and Collier, 2019), there is little information about how the audience perceives social problems (e.g., polarization, victimization, and credibility) caused by fake news on YouTube, and the answer which can offer ideas for fact-checking campaigns and responsible news consumption. Along the line of the influence and the attention fake news has on audience behaviors, this study examines the social problems that South Koreans have with fake news on YouTube. In South Korea, YouTube is the biggest source of unconfirmed, biased, and fabricated videos that are ill-effect in the public's news believability (Shin and Choi, 2019). Grounded from the post-truth news credibility perspective (Jin, Cao, Jiang and Zhang, 2014), this study investigates the relationships between South Koreans' YouTube use, political orientation, and perceptions of social problems caused by fake news and deepfake.

## 2. The peril of news credibility

The news credibility perspective in the post-fact news era posits that fake news-filled communication media can spread promptly through social media and result in negative evaluations of news by the audience (Jin et al., 2014). News credibility is defined as the perceived believability of a message, source or medium, visual support, and multimodality of news. As the perspective accentuates, exposure to fake news on YouTube can generate mistrust and concern about information, perceived social problems, and society overall. The theoretical typology derived from the perspective (Jin et al., 2014) claims that fake news cultivates audiences' mistrust in the media. As a result of exposure to fake news, the audience's use of social media can result in lower information credibility online. In other words, a fake news experience on YouTube likely shapes audiences' adverse perceptions about the information to which they are exposed and concerns about social problems they can face.

Some researchers maintain that the prevalence of fake news during the 2016 U.S. presidential election cycle affected electoral outcomes. In a study about the effects of fake news on the public's evaluation of news media, results found that exposure to elite discourse about the news being fake led to lower levels of trust in the media and inaccurate identification of true news (Van Duyn and Collier, 2019). As such, frequent exposure to fake news or discussions on fake news can influence how individuals view and assess news and related social affairs overall.

An audience's political affiliation may influence his or her perception of social problems caused by fake news. Depending on their political orientation, they may have dissimilar perceptions of how true or fake news adheres to journalistic norms compared to those at the opposite end of the political spectrum. A survey study was conducted on the relationship between ideological positions and news evaluation. In the study, liberals trust news media more than do conservatives, because liberals perceive that the news media operate ethically (Culver and Lee, 2019). However, in another study, the perceived true value of fake news was

higher among individuals with a conservative/rightwing political orientation (Arendt, Haim and Beck, 2019). Disinformation through fake news has the power to destroy social ties. In turn, fake news can dismantle social capital because fake news causes social conflicts (Asmolov, 2018).

The relationship between YouTube use and perceptions of social problems caused by fake news and deepfake has been an understudied area despite its increasing impact on audience perceptions. Audiences experience fake news and some conduct fact-checks to foster a truthful information sphere online. Audiences who have a high need for orientation of information become involved in fake news corrections by posting fact checks. Audiences also share fact checks to reinforce their existing attitudes toward social issues (Amazeen et al, 2019). The influence of YouTube use including fake news exposure on audience perception is significant, as found in past research. When audiences viewed fake news about political satire, exposure to fake news fostered feelings of inefficacy, alienation, and cynicism (Balmas, 2014). In the study, the perceived realism of fake news was stronger among those with high exposure to fake news than those with high exposure to both fake and hard news.

### **3. Deepfake**

Artificial intelligence (AI) exists not only in the form of texts or images but also in the swap of faces and voices in a video. The use of YouTube for news is linked with the advent of deepfakes, also called faceswap to a certain degree. Originated from the social media website Reddit (Knight, 2018), deepfakes refer to manipulated videos or audio clips from the original source using AI technology (Morris, 2019). Some deepfakes stitch one person's eyes, nose, and mouth over another person's face as though the fake person makes an announcement the person never did. Deepfakes on YouTube can influence the audience's evaluation of news and perceptions. Deepfakes concern both news audiences and journalists because they can damage journalism credibility and even harm deepfake victims (Morris, 2019).

No consent is obtained from the individuals whose likenesses are involved in deepfake videos. The superimposed faces on the bodies of others create distrustful news and erode credibility among audiences (Maras and Alexandrou, 2019). A deepfake video can have a powerful potential for incitement, particularly when the subjects are internationally well-known figures (Chesney and Citron, 2019). With advancing technologies, deepfakes are transforming assumptions of seeing, representing, verifying, and performing on YouTube videos (Fletcher, 2018). Exposure to deepfake videos raises concerns about the public's trust in YouTube videos. The credibility of information can be tainted if no alert on deepfakes is made when consuming YouTube video news. What is particularly alarming regarding deepfakes is that humans are hardwired to trust audiences' eyes and ears (Bates, 2018). On the other hand, Scheufele and Krause (2019) insist that it is impossible to identify individual information processing and acceptance of deepfakes without considering audiences' social networks, information ecology, group-, and social-level factors that increase the chances to be exposed to inaccurate information.

### **4. Research questions**

In South Korea, fake news is a social predicament due to its rapid spread on social media. South Korean audiences' frequent access to and monetary profits from YouTube prompted a large number of news uploads for likes and subscriptions. In recent data on digital media use in South Korea, the most popular social media platform in South Korea is YouTube followed by KakaoTalk and Facebook (Kim, 2018). The South Korean

people agree that fake news is dividing South Korean society as it deepens social conflicts and distorts public opinion (Hong and Jung, 2017).

Researchers on fake news in South Korea observe that news consumption patterns are associated with perceptions of social problems caused by fake news. Those who evaluated low credibility and high involvement with news perceived fake news as a widespread problem (Cho, A., 2019; Lee, Sung and Kim, 2019). In their study on predictors of fake news sharing, Yum and Jeong (2019) found that new media literacy and social tie motives were associated with the use of fake news and perceptions of social problems. Past research also finds that political orientation is a barometer for the perceptions of social problems caused by fake news (e.g., Arendt, Haim and Beck, 2019). From the observations above, the following two research questions are posed.

RQ1: How is YouTube use associated with the perceptions of social problems caused by fake news and deepfake?

RQ2: How is political orientation different in the perceptions of social problems caused by fake news and deepfake?

## 5. Method

### 5.1 Data collection and sample

The data were obtained from the Korea Press Foundation's (KPF) annual survey on media audiences. Between August 20-24, 2018, the KPF's Media Research Center collected data on YouTube use and audience perceptions of social problems caused by fake news and deepfake on web portals (e.g., Naver, Google, and Daum) and social media (e.g., YouTube). The KPF outsourced data collection to Micromillmbrain, a web survey company. The company owns a nationwide panel pool over the age of 20 for its regular data collection. Using a stratified sampling method based on gender, age range, and residence, the company contacted the pool and requested the individuals to participate in the survey via a website. A total of 8,687 panels received a survey request. Of the panels, 1,939 opened the survey link and 1,218 respondents completed the survey, representing a response rate of 14.0%. Sample distributions and media usage data are provided in Table 1.

### 5.2 Measurement instruments

#### 5.2.1 Media use

YouTube use in terms of content categories (music, movie, entertainment show, game, eating show, news, education, hobby, health, and fashion) was measured (0 = No, 1 = Yes). The survey also questioned the channels the respondents used for fake news on YouTube (0 = No, 1 = Yes), which included Kakao Messenger, Facebook, Band App, Internet bulletin, and search engines. Another group of questions was about fake news content the respondents were exposed to on YouTube (0 = No, 1 = Yes), including edited videos by a third person, live shows, edited videos by the original creator, videos with audio only, and videos with texts and music only.

The K-means clustering analysis was performed for categorized user groups. K-means clustering deals with a group of variables with similar characteristics. With the data, a K-means analysis enables researchers to group similar data points among the variables and discover underlying patterns for a new variable based on the algorithm (Lee and Ryu, 2019). The analysis generates a fixed number of clusters in a dataset.

Table 1. Demographics and media use of the sample ( $N = 1,218$ )

Variable	<i>N</i>	%
Gender		
Male	624	51.2
Female	594	48.8
Age		
20s	219	17.9
30s	243	19.9
40s	307	25.2
50s	300	24.6
Over 60	149	12.2
Education		
High school graduate	232	19.1
In college	66	5.4
College graduate	780	64.0
Graduate school	140	11.5
Monthly income (\$)		
Under 2,000	133	11.2
2,001-3,000	207	17.2
3,001-4,000	188	15.5
4,001-5,000	232	19.2
5,001-6,000	179	14.7
6,001-7,000	88	7.3
7,001-8,000	69	5.7
Over 8,000	112	9.2
Search engine use		
Naver	985	80.8
Google	148	12.1
YouTube	85	6.9
YouTube use		
User	948	77.8
Nonuser	270	22.1
Uses every day	374	39.5
Uses 3-5 days a week	245	25.8
Uses 1-2 days a week	241	25.4
YouTube content use		
Heavy	211	17.3
Moderate	377	31.0
Light	630	51.7
Channel use for fake news on YouTube		
Heavy	137	11.2
Moderate	132	10.8
Light	949	77.9
Fake news content use on YouTube by type		
Heavy	121	9.9
Moderate	104	8.5
Light	993	81.5

In specific, the survey questions asked the respondents about their YouTube content use in multiple categories. The categories consisted of music, movies, entertainment, games, eating, news, education, hobbies, life (daily life), health, and fashion (0 = No and 1 = Yes). The 11 categories were entered into K-

means clustering with 10 iterations and generated three clusters (heavy, moderate, and light users of the categories). The K-means clustering analysis yielded 211 heavy users, 377 moderate users, and 630 light users (Table 1).

Another group of questions asked the respondents to identify the Internet channels that they used for fake news on YouTube. The asked channels include mobile messengers (e.g., Kakao Talk), Facebook, Internet cafes (e.g., Band), Internet bulletins, and Internet search engines (0 = No and 1 = Yes). The K-means clustering with three clusters produced three groups: heavy users ( $n = 137$ ), moderate users ( $n = 132$ ), and light users ( $n = 949$ ) (Table 1).

The third cluster of users was fake news video exposure on YouTube by type. The types include edited videos (e.g., multiple clips pieced together by an editor), live shows (e.g., YouTube live), creators' original videos (user-generated content), audio-based videos (e.g., audiobook), and subtitle-based videos (e.g., texts with music). A new variable was drawn for heavy ( $n = 121$ ), moderate ( $n = 104$ ), and light users ( $n = 993$ ) (Table 1).

### 5.2.2 Political orientation

The sample respondents were asked to label their political orientation from very conservative (1) to conservative (2), independent (3), liberal (4), and very liberal (5). A frequency analysis yielded that the sample was on the middle ground in political orientation (Table 2).

### 5.2.3 Perceptions of social problems by fake news

A cluster of perception questions was asked to the respondents about how they perceived social problems caused by fake news on YouTube. The questions were a) Fake news on YouTube causes social polarization (from 1 = strongly disagree to 4 = strongly agree), b) Fake news on YouTube is not a thing to worry about (reverse coded), c) Fake news on YouTube causes serious social harm, and d) Fake news on YouTube makes me suspect all news I use on YouTube (Table 2).

Table 2. Means and standard deviations of YouTube use and variables ( $N = 1,218$ )

Variable	M	SD
Minutes per YouTube use	76.1	68.8
YouTube access per day	3.1	1.0
Number of YouTube channel subscription	4.6	12.5
Political orientation	3.12	0.79
Perceptions of social problems caused by fake news		
Causes social polarization	2.93	0.65
Not a thing to worry about (reverse coded)	2.49	0.76
Causes serious social harm	2.92	0.71
Makes me suspect news	2.80	0.68
Perceptions about deepfake		
Provides usefulness and fun (reverse coded)	2.93	1.21
Scam content	4.10	0.97
Should be regulated	4.32	0.93
Regulation is useless (reverse coded)	3.20	1.17
Viewers should not be criticized (reverse coded)	3.58	1.08
Should avoid victimization	4.17	0.79

### 5.2.4 Perceptions of social problems by deepfake

The respondents assessed their perceptions of social problems caused by deepfake with the following questions, a) Deepfake can provide users with usefulness and fun (reverse coded) (from 1= strongly disagree to 5 = strongly agree), b) Deepfake is scam content, c) Deepfake should be regulated because it can victimize viewers, d) Regulations on deepfake are useless because anyone can make deepfake easily (reverse coded), e) Deepfake viewers should not be criticized because they watch the videos without the knowledge of video fabrication (reverse coded), and f) All viewers should be careful of every video they watch on YouTube to avoid deepfake victimization (Table 2).

## 6. Results

A series of ANOVA was conducted to test group differences (YouTube content use, channel use for fake news on YouTube, and fake news content use on YouTube by type) in the perceptions of social problems caused by fake news and deepfake. The independent variables are heavy, moderate, and light user groups of a) YouTube content use, b) channel use for fake news on YouTube, c) fake news content use on YouTube by type, and political orientation. The dependent variables are audiences' perceptions of social problems caused by fake news and deepfake.

Table 3. Group difference of YouTube content use in perceptions of social problems caused by fake news ( $N = 1,218$ )

Item	Group ( <i>M, SD</i> )			<i>F</i> ( <i>df</i> )	<i>η</i> <sup>2</sup>	<i>p</i>
	1 ( <i>n</i> = 630)	2 ( <i>n</i> = 377)	3 ( <i>n</i> = 211)			
1	2.91 (0.67)	2.93 (0.67)	3.00 (0.62)	1.73 (2, 1,215)	.05	.177
2	2.53 (0.77)	2.48 (0.74)	2.40 (0.80)	2.53 (2, 1,215)	.06	.080
3	2.93 (0.73)	2.89 (0.70)	2.94 (0.70)	0.39 (2, 1,215)	.03	.670
4	2.80 (0.68)	2.77 (0.68)	2.85 (0.68)	0.80 (2, 1,215)	.04	.440

Note. The dependent variables are: 1. Fake news on YouTube causes social polarization. 2. Fake news on YouTube is not a thing to worry about (reverse coded). 3. Fake news on YouTube is serious social harm. 4. Fake news on YouTube makes me suspect all the news I use on YouTube. Group 1: Light YouTube content users. Group 2: Moderate YouTube content users. Group 3: Heavy YouTube content users.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

Table 4. Group difference of channel use for fake news on YouTube in perceptions of social problems caused by fake news ( $N = 1,218$ )

Item	Group ( <i>M, SD</i> )			<i>F</i> ( <i>df</i> )	<i>η</i> <sup>2</sup>	<i>p</i>
	1 ( <i>n</i> = 949)	2 ( <i>n</i> = 132)	3 ( <i>n</i> = 137)			
1	2.89 (0.65)	3.02 (0.65)	3.17 (0.62)	12.84 (2, 1,215)	.14	.000***
2	2.51 (0.73)	2.50 (0.81)	2.40 (0.95)	1.10 (2, 1,215)	.04	.331
3	2.85 (0.70)	3.06 (0.72)	3.23 (0.71)	19.56 (2, 1,215)	.18	.000***
4	2.72 (0.66)	3.00 (0.71)	3.15 (0.63)	31.35 (2, 1,215)	.22	.000***

Note. The dependent variables are: 1. Fake news on YouTube causes social polarization. 2. Fake news on YouTube is not a thing to worry about (reverse coded). 3. Fake news on YouTube is serious social harm. 4. Fake news on YouTube makes me suspect all the news I use on YouTube. Group 1: Light users that encountered channels with fake news on YouTube. Group 2: Moderate users that encountered channels with fake news on YouTube. Group 3: Heavy users that encountered channels with fake news on YouTube.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

RQ1 asked how different types of YouTube user groups perceive social problems caused by fake news and deepfake. As seen in Table 3, the study found no differences among YouTube content user groups for fake news exposure. When the groups used diverse channels for fake news on YouTube, there were group differences (Table 4). Depending on the degree to which the respondents used channels with fake news, they believed fake news on YouTube invoked social polarization, social harm, and low information credibility.

A post hoc Scheffe test for group differences showed some significance among the heavy, moderate, and light user groups in the perceptions of social problems caused by fake news. Significant differences were observed between the heavy and moderate groups and between the moderate and light user groups in the perceptions. The results indicate that more heavy and moderate users of channels for fake news on YouTube than light users view that fake news on YouTube increases social polarization (Heavy vs. Light: Mean Difference = .28,  $p < .001$ , CI = .14-.43). The same results were found in social harm (Heavy vs. Light: Mean Difference = .37,  $p < .001$ , CI = .21-.53; Moderate vs. Light: Mean Difference = .21,  $p < .001$ , CI = .05-.37) and low information credibility (Heavy vs. Light: Mean Difference = .42,  $p < .001$ , CI = .28-.58; Moderate vs. Light: Mean Difference = .28,  $p < .001$ , CI = .13-.43).

Table 5. Group difference of fake news content use on YouTube by type in perceptions of social problems caused by fake news ( $N = 1,218$ )

Item	Group ( <i>M, SD</i> )			<i>F</i> ( <i>df</i> )	$\eta^2$	<i>p</i>
	1 ( <i>n</i> = 993)	2 ( <i>n</i> = 104)	3 ( <i>n</i> = 121)			
1	2.89 (0.64)	3.02 (0.69)	3.17 (0.62)	11.08 (2, 1,215)	.13	.000***
2	2.51 (0.73)	2.54 (0.80)	2.29 (0.97)	4.80 (2, 1,215)	.09	.008**
3	2.87 (0.71)	3.01 (0.70)	3.21 (0.74)	12.75 (2, 1,215)	.14	.000***
4	2.73 (0.67)	2.98 (0.62)	3.21 (0.63)	32.06 (2, 1,215)	.22	.000***

Note. The dependent variables are: 1. Fake news on YouTube causes social polarization. 2. Fake news on YouTube is not a thing to worry about (reverse coded). 3. Fake news on YouTube is serious social harm. 4. Fake news on YouTube makes me suspect all the news I use on YouTube. Group 1: Light users that viewed fake news on YouTube. Group 2: Moderate users that viewed fake news on YouTube. Group 3: Heavy users that viewed fake news on YouTube.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

The participants who believed they were exposed to fake news on YouTube by type showed differences in perceptions of social problems caused by fake news, including social polarization, concerns about fake news, social harm, and information credibility (Table 5). In a post hoc Scheffe analysis, there were significant differences between heavy and light users that viewed fake news on YouTube by type. For social polarization, the heavy group was higher than the light group, indicating that heavy users of fake news on YouTube by type were more concerned about social polarization than the light group (Mean Difference = .28,  $p < .001$ , CI = .14-.43).

For concern about fake news, the heavy group was more worried about fake news on YouTube by type than was the light group (Mean Difference = .22,  $p < .001$ , CI = .04-.41). As to fake news as social harm, the heavy group marked significantly higher than the light group (Mean Difference = .33,  $p < .001$ , CI = .17-.50). The three groups responded to the low credibility of fake news on YouTube by type in the order of the heavy group followed by the moderate and the light group (Heavy vs. Light: Mean Difference = .47,  $p < .001$ , CI = .32-.63; Moderate vs. Light: Mean Difference = .25,  $p < .001$ , CI = .08-.42; Heavy vs. Moderate: Mean Difference = .22,  $p < .001$ , CI = .01-.44). The results indicate that heavy and moderate users of fake news on YouTube by type are more likely than light users to be aware of social problems caused by fake news.

Table 6. Group difference of YouTube content use in perceptions of social problems caused by deepfake ( $N = 1,218$ )

Item	Group ( <i>M, SD</i> )			<i>F</i> ( <i>df</i> )	$\eta^2$	<i>p</i>
	1 ( <i>n</i> = 630)	2 ( <i>n</i> = 377)	3 ( <i>n</i> = 211)			
1	2.85 (1.17)	3.12 (1.21)	2.82 (1.26)	6.76 (2, 1,215)	.10	.001**
2	4.07 (0.98)	4.09 (0.95)	4.25 (0.97)	2.85 (2, 1,215)	.06	.060
3	4.26 (0.98)	4.35 (0.84)	4.44 (0.91)	3.22 (2, 1,215)	.07	.040*
4	3.24 (1.14)	3.22 (1.16)	3.02 (1.27)	2.85 (2, 1,215)	.06	.058
5	3.35 (1.04)	3.62 (1.05)	3.45 (1.21)	1.81 (2, 1,215)	.05	.164
6	4.10 (0.93)	4.18 (0.80)	4.33 (0.86)	5.33 (2, 1,215)	.09	.005**

Note. The dependent variables are: 1. Deepfake can provide users with usefulness and fun (reverse coded). 2. Deepfake is scam content. 3. Deepfake should be regulated because it can victimize viewers. 4. Regulation on deepfake is useless because anyone can make deepfake easily (reverse coded). 5. Deepfake viewers should not be criticized because they watch them without the knowledge of video fabrication (reverse coded). 6. All viewers should be careful of every video they watch on YouTube to avoid deepfake victims. Group 1: Light YouTube content users. Group 2: Moderate YouTube content users. Group 3: Heavy YouTube content users.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

As to the perceptions of social problems caused by deepfake, YouTube content user groups showed significant differences (Table 6). The moderate user group was less likely than the light user group to perceive deepfake to be useful and fun. On the contrary, the heavy and moderate groups were higher than the light group in the perception of deepfake regulation and victimization. The difference was significant between the heavy and light group in a Scheffe post-hoc analysis (Mean Difference = .26,  $p < .01$ , CI = .07-.46) and between the heavy and moderate groups (Mean Difference = .29,  $p < .05$ , CI = .04-.55). The moderate and light groups viewed that deepfake provides less usefulness and fun than did the heavy group. As to victims due to deepfake, the heavy group was higher than the light group (Mean Difference = .23,  $p < .01$ , CI = .06-.40). In other words, heavy YouTube content users were more aware of victimization caused by deepfake than were light YouTube content users.

Table 7. Group difference of channel use for fake news on YouTube in perceptions of social problems caused by deepfake ( $N = 1,218$ )

Item	Group ( <i>M, SD</i> )			<i>F</i> ( <i>df</i> )	$\eta^2$	<i>p</i>
	1 ( <i>n</i> = 949)	2 ( <i>n</i> = 132)	3 ( <i>n</i> = 137)			
1	2.94 (1.18)	2.74 (1.19)	2.97 (1.37)	1.71 (2, 1,215)	.05	.181
2	4.09 (0.96)	4.16 (1.01)	4.15 (1.01)	0.43 (2, 1,215)	.02	.642
3	4.32 (0.89)	4.47 (1.01)	4.30 (1.08)	0.20 (2, 1,215)	.01	.816
4	3.21 (1.14)	3.20 (1.24)	3.12 (1.31)	0.31 (2, 1,215)	.02	.734
5	3.60 (1.03)	3.54 (1.16)	3.42 (1.28)	1.89 (2, 1,215)	.05	.150
6	4.16 (0.87)	4.03 (1.02)	4.31 (0.89)	3.40 (2, 1,215)	.07	.033*

Note. The dependent variables are: 1. Deepfake can provide users with usefulness and fun (reverse coded). 2. Deepfake is scam content. 3. Deepfake should be regulated because it can victimize viewers. 4. Regulation on deepfake is useless because anyone can make deepfake easily (reverse coded). 5. Deepfake viewers should not be criticized because they watch them without the knowledge of video fabrication (reverse coded). 6. All viewers should be careful of every video they watch on YouTube to avoid deepfake victims. Group 1: Light users that encountered channels with fake news on YouTube. Group 2: Moderate users that encountered channels with fake news on YouTube. Group 3: Heavy users that encountered channels with fake news on YouTube.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

The results from the groups that encountered channels with fake news on YouTube demonstrate that the heavy group was higher than the moderate group in victimization caused by deepfake (Table 7). In a Scheffe post-hoc analysis, a significant difference was found between the heavy and moderate groups of channel use for fake news on YouTube (Mean Difference = .28,  $p < .05$ , CI = .02-.55). In turn, heavy channel users for fake news on YouTube were more likely than moderate users to be aware of deepfake victimization. There were no significant differences found among the groups of channel use for fake news on YouTube in their perceptions of social problems caused by deepfake (Table 8).

Table 8. Group difference of fake news content use on YouTube by type in perceptions of social problems caused by deepfake ( $N = 1,218$ )

Item	Group ( <i>M</i> , <i>SD</i> )			<i>F</i> ( <i>df</i> )	$\eta^2$	<i>p</i>
	1 ( <i>n</i> = 993)	2 ( <i>n</i> = 104)	3 ( <i>n</i> = 121)			
1	2.94 (1.19)	2.81 (1.23)	2.90 (1.30)	0.59 (2, 1,215)	.03	.552
2	4.10 (0.96)	4.14 (1.01)	4.12 (1.02)	0.11 (2, 1,215)	.01	.889
3	4.32 (0.91)	4.27 (1.06)	4.41 (0.99)	0.93 (2, 1,215)	.03	.391
4	3.20 (1.15)	3.26 (1.23)	3.12 (1.28)	0.44 (2, 1,215)	.02	.642
5	3.59 (1.05)	3.60 (1.07)	3.41 (1.26)	1.51 (2, 1,215)	.05	.220
6	4.16 (0.87)	4.22 (0.91)	4.19 (1.02)	0.29 (2, 1,215)	.02	.748

Note. The dependent variables are: 1. Deepfake can provide users with usefulness and fun (reverse coded). 2. Deepfake is scam content. 3. Deepfake should be regulated because it can victimize viewers. 4. Regulation on deepfake is useless because anyone can make deepfake easily (reverse coded). 5. Deepfake viewers should not be criticized because they watch them without the knowledge of video fabrication (reverse coded). 6. All viewers should be careful of every video they watch on YouTube to avoid deepfake victims. Group 1: Light users that viewed fake news on YouTube. Group 2: Moderate users that viewed fake news on YouTube. Group 3: Heavy users that viewed fake news on YouTube.

\* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

A bivariate Pearson correlation test was conducted to check the relationship between political orientation and perceptions of social problems caused by fake news and deepfake (RQ2). Results showed a positive association between political orientation and social polarization ( $r = .11$ ,  $p < .001$ ). The more the respondents were liberal, the more they believed that fake news caused social polarization. The liberals were concerned about fake news as social harm ( $r = .07$ ,  $p < .05$ ). There was a positive correlation between political orientation (liberal) and deepfake regulation ( $r = .06$ ,  $p < .05$ ).

## 7. Discussion and conclusion

### 7.1 Discussion

The current study examined the differences of YouTube user groups in the perceptions of social problems caused by fake news and deepfake. The three groups were a) YouTube content use, b) channel use for fake news on YouTube, and c) fake news content use on YouTube by type. Overall, the results of the analyses lead to an interpretation that heavy YouTube users that are exposed to fake news are more likely than light users to be concerned about social polarization, social harm, and low credibility. The results are congruent with the past research on the comparison between real news and fake news and the fake news effect on information credibility (Cho, E., 2019; Tandoc, Jenkins and Craft, 2019). In deepfake, heavy YouTube content users appear to speak up for deepfake regulation and victimization.

The direct influence of channel use for fake news on Youtube engendered beliefs in social polarization, social harm, and news credibility (RQ1). Wenzel (2019) argued that fake news amplifies an atmosphere of uncertainty and that such ambiguity makes audiences take multiple steps to verify the information. In the filtering process, news credibility is doubted and forms distrust. Polarization in social, political, and cultural milieus is triggered by false information (Rohman and Ang, 2019). Fake news on social media poses a threat to the efficiency of democracy by influencing public decisions such as election or referendum (Timmer, 2017). In this view, South Korean users' access to YouTube, the most highly used social media platform, may threaten democracy and social consensus. Given the results that heavy users of fake news content on YouTube by type are concerned about the political and social divide, YouTube can be a driver for democratic practices such as elections in South Korean society. With the dissemination of false information, South Korean YouTube users' partisanship can be reinforced. Although participation in an election is an aspect of democracy, if the election result is derived from exposure to false information, then self-efficacy on fact-checking is a necessary practice.

It is disconcerting that fake news exposure lowers trust in news audiences' view. The South Korean YouTube users of the current study highly suspect the information they use, but they spend much time consuming it. One crucial challenge is that users fail to identify whether the information is fully or partially false. When users are not trained with civic online reasoning literacy, the influence of fake news can be negatively impactful (Nygren and Guath, 2019). Recently, fact-checking tools and websites have grown to a significant level to filter fake news on multiple online platforms. Nonetheless, only a small portion of checked information passes the fact-checking tests due to variable settings, indicating that much information available to the public can be false (Palau-Sampio, 2018). In other words, both fake news on social media and fact-checking websites can be factors for low news credibility. As audiences view only what interests them and frequently consume their news because of an algorithm, false news in a topic can lead to continuous exposure to fake news and it can lead to low credibility and misperception (Uciu, 2018).

The heavy user groups of YouTube content agreed that deepfake should be regulated because it could victimize viewers in terms of information reception, interpretation, and further action. Deepfake can negatively affect journalists and audiences alike. When journalists mistakenly use deepfake for their news, false information can massively harm victims (Morris, 2019). As the analysis results show, heavy YouTube users are advocates of strict regulation and high awareness of deepfake. The light user group which is the largest group ( $n = 630$ ) is not aware of the seriousness of deepfake and the damage it can incur in the news consumption process. Experts in artificial intelligence and video production foresee that creating ultra-realistic deepfakes is becoming easier and more frequent (Dixon and Judge, 2019). As heavy users are aware of deepfake's danger and victimization, its possible effects on election campaigns and public opinion should interest researchers and journalists. The results of responses from over 1,200 YouTube users in South Korea demonstrate that social media platforms incubate perceptions of social problems caused by fake news and deepfake. The spreadable function of YouTube can polarize and victimize users when the information is false. Heavy YouTube users believe such concerns about the political divide and low credibility are consequences of fake news.

The correlation analyses for RQ2 suggest that in South Korean society, the liberals are more concerned than the conservatives about political polarization due to fake news on YouTube. A recent study found a congruent result that individuals engaged with fake news sources were conservative-leaning, older, and highly involved in political news (Grinberg et al., 2019). In other words, the conservatives are more lenient toward fake news than the liberals. Conservative YouTube channels are dominant in a recent channel ranking survey in South Korea (Kim, 2019). Liberals may believe that YouTube is likely for the conservatives on which fake news is produced and disseminated. Therefore, liberals claim that fake news and deepfake should

be regulated. The ruling party of South Korea insists that social media is a major generator of fake news (Lee, 2019). Along with the claim, the liberal respondents tend to perceive that fake news on YouTube causes social polarization. In turn, the liberals of South Korea may view YouTube as a threat to their partisanship.

## **7.2 Implication**

### **7.2.1 Theoretical implication**

The theoretical typology regarding fake news posits that widespread false information through YouTube can prompt negative perceptions of social consequences caused by fake news (Jin et al., 2014). The analyses of the present study proved the proposition by showing that frequent exposure to the non-factual, misleading, false, and fabricated news triggers perceptions of social polarization, harm, regulation, and victimization. Therefore, a fake news use-effect model can be built through this study. Though not tested in the current analyses, exposure to fake news can lead to a need for orientation that precedes self-efficacy (Allcott and Gentzkow, 2017). Self-efficacy can explain negative consequences such as polarization, victimization, and harm. The consequences may then draw a need for regulation. Partisanship and other demographic backgrounds can be contingents in the theoretical model.

### **7.2.2 Practical implication**

The South Korean people enjoy using YouTube which is ranked the number-one social media platform in that country. News organizations, creators, and digital-native news media influx into YouTube to create news channels. As the number of subscribers and competition among YouTubers mounts, the quality of the news becomes questionable. Therefore, news organizations, political parties, and civic groups may utilize YouTube for news dissemination but with caution. YouTube can be a double-edged sword by bringing audiences together for support as well as lowering information credibility. With the technology-driven, machine learning-based algorithm system, YouTube may rank fake news high if views increase quickly (Shephard, 2018). As seen in liberals' concern about YouTube as a fake news platform, the conservatives in South Korea may need to run campaigns highlighting the claim that their news is authentic. Both conservative and liberal political parties need to pay attention to not only news posts but also news quality so that audiences can trust what they view on YouTube. The positive relationship between the liberals and social polarization reflects that the liberals are aware of the news posted by the conservatives.

## **7.3 Limitations, suggestions, and conclusion**

This study possesses some theoretical and methodological restrictions. The survey questions are from a foundation's (Korea Press Foundation) own selections rather than theoretically verified scales drawn from empirical research. For that reason, a test of the theoretical model was not feasible with the data. Group difference tests were conducted between categorical independent variables and continuous dependent variables. In future research, more continuous data for independent variables can be used for data collection and inferential analyses to form a theoretical model. Researchers need to investigate the influence of fake news on social issues on attitudes, interpretation, perceived realism, and behavioral intention toward the issues.

The exposure to fake news and deepfake was measured with the respondents' self-judgment. Therefore, perceived exposure to fabricated information does not guarantee fake news exposure. The viability of deepfake will increase as artificial intelligence technology advances (Anzalone, 2019). Research on deepfake in experiments may illuminate its impact and suggest solutions with high internal validity. The measurements'

response ranges were not consistent. Some used from 1-4, meanwhile, others used from 1-5. The reason for the inconsistency is attributed to the original data format. The current study used a secondary data set collected by the Korea Press Foundation's survey. Future research needs to set consistent response ranges for the validity of data analysis.

In conclusion, South Korean YouTube users are concerned about the harm of fake news and deepfake and called for regulation in Korean society. Fake news began by disinforming audiences and now pivots to change behaviors that can galvanize serious consequences. The current study proved that fake news is a social divider rather than an integrator. Unless fake news on YouTube can be stopped, then continuous digital media literacy will be necessary for a healthy South Korean society.

## References

- Allcott, H. and Gentzkow, M. (2017). Social media and fake news in the 2016 election. *Journal of Economic Perspectives*, 31(2), 211-236. <https://doi.org/10.1257/jep.31.2.211>
- Amazeen, M. A., Vargo, C. J. and Hopp, T. (2019). Reinforcing attitudes in a gatewatching news era: individual-level antecedents to sharing fact-checks on social media. *Communication Monographs*, 86(1), 112–132. <https://doi.org/10.1080/03637751.2018.1521984>
- Anzalone, R. (2019, November 1). AI altered video is a threat to society. How do we stop the harm deepfakes can cause? Retrieved from <https://www.forbes.com/sites/robertanzalone/2019/11/01/ai-altered-video-is-a-threat-to-society--how-do-we-stop-the-harm-deepfakes-can-cause/#4549d6711f1d> (Accessed 25 July 2020)
- Arendt, F., Haim, M. and Beck, J. (2019). Fake News, Warnhinweise und perzipierter Wahrheitsgehalt: Zur unterschiedlichen Anfälligkeit für Falschmeldungen in Abhängigkeit von der politischen Orientierung. *Publizistik: Vierteljahreshefte Für Kommunikationsforschung*, 64(2), 181–204. <https://doi.org/10.1007/s11616-019-00484-4>
- Asmolov, G. (2018). The disconnective power of disinformation campaigns. *Journal of International Affairs*, 71(1.5), 69–76.
- Balmas, M. (2014). When fake news becomes real: combined exposure to multiple news sources and political attitudes of inefficacy, alienation, and cynicism. *Communication Research*, 41(3), 430–454. <https://doi.org/10.1177/0093650212453600>
- Bates, M. E. (2018). Say what? 'Deepfakes' are deeply concerning. *Online Searcher*, 42(4), 64.
- Chesney, R. and Citron, D. (2019). Deepfakes and the new disinformation war: the coming age of post-truth geopolitics. *Foreign Affairs*, 98(5), 147-155.
- Cho, A. R. (2019). An exploratory study on the information recipients' acceptance (comprehension, favorability) and diffusion: according to the authenticity of the news (real news vs. fake news). Unpublished master's thesis, Daegu University, Daegu, South Korea
- Cho, E. H. (2019). The effect of news media usage and trust on fake news recognition, discernment and attitude to accept. *Journal of Communication Science*, 19(1), 180-213.
- Culver, K. B. and Lee, B. (2019). Perceived ethical performance of news media: regaining public trust and encouraging news participation. *Journal of Media Ethics*, 34(2), 87–101. <https://doi.org/10.1080/23736992.2019.1599720>

- Dixon Jr. and Judge, H. B. (2019). Deepfakes: more frightening than photoshop on steroids. *Judges' Journal*, 58(3), 35–37.
- Fletcher J. (2018). Deepfakes, artificial intelligence, and some kind of dystopia: the new faces of online post-fact performance. *Theatre Journal*, 70(4), 455-471. <https://doi.org/10.1353/tj.2018.0097>.
- Grinberg, N., Joseph, K., Friedland, L., Swire-Thompson, B. and Lazer, D. (2019). Fake news on Twitter during the 2016 U.S. presidential election. *Science*, 363(6425), 374–378. <https://doi.org/10.1126/science.aau2706>
- Hong, S. Y. and Jung, E. C. (2017). Fake news and journalism's credibility crisis: phenomena and alternatives. *Crisisonomy*, 13(8), 43-60.
- Jin, Z., Cao, J., Jiang, T. and Zhang, Y. (2014). News credibility evaluation on microblog with a hierarchical propagation model. *IEEE International Conference on Data Mining*, Shenzhen, China, 230-239. <https://doi.org/10.1109/ICDM.2014.91>
- Kim, I. (2018, May 4). YouTube is the most used mobile social media app. Retrieved from <http://www.bloter.net/archives/339870> (Accessed 24 July 2020)
- Kim, M. S. (2019, March 27). The most popular political YouTube channels are conservative: number one rank is a liberal channel. Retrieved from <https://www.zdnet.co.kr/view/?no=20190326173948> (Accessed 24 July 2020)
- Knight, W. (2018). Fake America great again. *MIT Technology Review*, 121(5), 36–41.
- Lee, E. J., Sung, D. K. and Kim, M. K. (2019). Mediation effect of confirmation bias and involvement on social communication behavior: a comparison of real news with fake news. *Asian Journal of Media, Arts, and Humanity Studies*. 9(4), 765-784.
- Lee, J. (2019, October 1). The Democratic Party fines fake news on YouTube. Retrieved from <http://www.hani.co.kr/arti/politics/assembly/911654.html> (Accessed 1 May 2020)
- Lee, S. Y. and Ryu, M. H. (2019). Exploring characteristics of online news comments and commenters with machine learning approaches. *Telematics & Informatics*, 43, N.PAG. <https://doi.org/10.1016/j.tele.2019.101249>
- Maras, M.-H. and Alexandrou, A. (2019). Determining authenticity of video evidence in the age of artificial intelligence and in the wake of deepfake videos. *The International Journal of Evidence & Proof*, 23(3), 255–262. <https://doi.org/10.1177/1365712718807226>
- Mihailidis, P. and Viotty, S. (2017). Spreadable spectacle in digital culture: civic expression, fake news, and the role of media literacies in “Post-Fact” society. *American Behavioral Scientist*, 61(4), 441–454. <https://doi.org/10.1177/0002764217701217>
- Morris, A. (2019). Going deep: in a world of “fake news” accusations, deepfakes may soon be a very real problem for journalists. *Quill*, 107(2), 21–25.
- Nygren, T. and Guath, M. (2019). Swedish teenagers' difficulties and abilities to determine digital news credibility. *NORDICOM Review*, 40(1), 23–42. <https://doi.org/10.2478/nor-2019-0002>
- Palau-Sampio, D. (2018). Fact-checking and scrutiny of power: supervision of public discourses in new media platforms from Latin America. *Communication & Society*, 31(3), 347–365. <https://doi.org/10.15581/003.31.3.347-365>

- Pennycook, G., Cannon, T. D. and Rand, D. G. (2018). Prior exposure increases perceived accuracy of fake news. *Journal of Experimental Psychology: General*, 147(12), 1865-1880. <http://doi.org/10.1037/xge0000465>
- Quintanilha, T. L., Silva, M. T. and Lapa, T. (2019). Fake news and its impact on trust in the news. Using the Portuguese case to establish lines of differentiation. *Communication & Society*, 32(3), 17–33. <https://doi.org/10.15581/003.32.3.17-32>
- Rohman, A. and Ang, P. H. (2019). Truth not fear: countering false information in a conflict. *International Journal of Communication*, 13, 4586–4601.
- Scheufele, D. A. and Krause, N. M. (2019). Science audiences, misinformation, and fake news. *Proceedings of the National Academy of Sciences of the United States of America*, 116(16), 7662–7669. <https://doi.org/10.1073/pnas.1805871115>
- Shephard, A. (2018, February 23). YouTube’s fake news problem isn’t going away. Retrieved from <https://newrepublic.com/article/147174/youtubes-fake-news-problem-isnt-going-away> (Accessed 22 July 2020)
- Shin, C. and Choi, M. (2019, August 22). YouTube is hotbed of fake news in South Korea: survey. Retrieved from <https://pulsenews.co.kr/view.php?year=2019&no=652496> (Accessed 22 May 2020)
- Tandoc, E. C., Jenkins, J. and Craft, S. (2019). Fake news as a critical incident in journalism. *Journalism Practice*, 13(6), 673–689. <https://doi.org/10.1080/17512786.2018.1562958>
- Timmer, J. (2017). Fighting falsity: fake news, Facebook, and the First Amendment. *Cardozo Arts & Entertainment Law Journal*, 35(3), 669–705.
- Uciu, I. (2018). Credibility and freedom of choice in social media in relation with traditional media. *Journal of Media Research*, 11(3), 24–34. <https://doi.org/10.24193/jmr.32.2>
- Van Duyn, E. and Collier, J. (2019). Priming and fake news: the effects of elite discourse on evaluations of news media. *Mass Communication & Society*, 22(1), 29–48. <https://doi.org/10.1080/15205436.2018.1511807>
- Wenzel, A. (2019). To verify or to disengage: coping with “fake news” and ambiguity. *International Journal of Communication*, 13, 1977–1995.
- Yum, J. and Jeong, S. (2019). Predictors of fake news exposure and sharing: personality, new media literacy, and motives. *Korean Journal of Journalism & Communication Studies*, 63(1), 7-45.