



## Research article

## Media and interpersonal channels uses and preferences during the COVID-19 pandemic: the case of the United States, Thailand, and Croatia

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## ABSTRACT

According to media systems dependency theory, increased dependence on media to meet individual needs is directly proportional to greater perceived media importance in one's life and subsequently stronger media effects on one's attitudes and behavior. This dependency relationship intensifies during times of uncertainty or crisis. Although several recent studies have focused on media dependence during health crises such as SARS and H1N1 influenza, insights from eastern countries may not be validated in other hemisphere. Therefore, the purpose of the current study was to adopt a cross-cultural lens to examine how participants from three different continents used media during the COVID-19 pandemic. In total, 860 adults completed a survey during April and May 2020. Participants were asked to provide demographic and socioeconomic details, followed by questions measuring their media consumption, channel preferences, motivations, and perception of their well-being during the COVID-19 pandemic. Results revealed that national culture had a strong influence on media use and preferences during the COVID-19 crisis. For example, the US participants spent the most time using the media but scored the lowest on well-being. This aligns with the claim that in individualistic countries people rely on media more than on their social network. US participants also used the media for surveillance goals more than their Thai or Croatian counterparts. Another cultural difference was that Thai participants reported using the media to relax more than other nationalities, which reflects the Thai's "way of life" and can explain their higher score on well-being. Finally, there were cultural differences in the use of social media. While Croatian and Thai participants' use of social media reflected collectivistic tendencies (using social media for social interaction), among Americans, social media use reflects individualistic trends (using social media for surveillance). The study discusses limitations and suggestions for future research.

## 1. Introduction

The world is grappling with the acute respiratory disease (COVID-19) pandemic caused by the SARS-Cov-2 novel coronavirus that continues to devastate lives, economies, and communities. Since its reported origin in Wuhan, China, in December, 2019, the number of recorded COVID-19 cases has risen exponentially to encompass several countries across continents. At the time of writing, the World Health Organization registered over 170,000,000 confirmed cases of COVID-19 and over 3.5 million deaths caused by the virus (COVID-19 Dashboard, June 2021) -

although experts believe that the actual numbers may be much higher (NCHS, 2021). To date, the highest number of confirmed cases has been recorded in the United States, closely followed by Brazil, India, and France (COVID-19 Dashboard, June 2021).

The unprecedented nature of this health crisis, coupled with unpredictable and constantly changing guidelines and reports, has prompted the need to stay informed of the latest developments. In addition to this, social distancing and quarantine mandates have confined many people to their homes for extended periods of time. For many, the media plays a vital role in defining "reality" during and after a crisis, and much more so

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compared to non-crisis situations (Lyu, 2012). According to media systems dependency theory, during times of crisis such as natural disasters, terrorist attacks, and public health emergencies, audiences rely on mass media to fulfill their informational, recreational, and social utility needs (see Table 1; Ball-Rokeach and DeFleur, 1976; Lowrey, 2004).

While earlier media systems dependencies research found that television played a dominant role during public crises such as natural disasters and terrorist attacks (Carey, 2002; Juric and Sylvester, 2007), more recent studies (e.g., Jung, 2012; Lyu, 2012) suggest that younger generations tend to depend on the Internet more than traditional media when searching for information about public health crises. Most of these studies, however, were conducted with university students from a single country, thus preventing cross-cultural comparisons.

The COVID-19 pandemic offers an ideal context in which to examine how audiences use mass media during times of crisis, particularly given the likelihood of increased media dependency in the face of an ambiguous and evolving health crisis. The combined duress stemming from its ambiguity, novelty, and prolonged social isolation makes COVID-19 especially relevant to media dependency scholars. This is because in addition to informational needs (e.g., news, expert guidance), media use is inherently linked to overcoming the confines of quarantine and/or isolation and reaching out to others for social support and psycho-emotional well-being. Therefore, this study adopts a cross-cultural lens to examine how participants from three continents used media and interpersonal channels during the COVID-19 pandemic. We chose the United States (North America), Croatia (Europe), and Thailand (Asia) for the following reasons. First, the co-authors of this study are from the respective countries. Therefore, it was easy to translate the questionnaire from English into Thai and Croatian languages. Second, all three countries differed in the measures imposed to monitor the spread of COVID-19, which may have influenced how much time the citizens of each country spent engaging with media. On a macro-level, there might also be differences in channel use due to variations in the respective countries' technology infrastructures. For example, in 2020 Internet penetration in Thailand was 75% (statista, 2021a), while in the United States and Croatia it was 85% (statista, 2021b; 2021c). Third, there is a deficit of intercultural media studies comparing the media use and its effect at the level of different nationals and across different cultures (Bonfadelli, 2017). Most media studies have been conducted with participants (often college students) from the Anglo-American world, and the results were then generalized across cultures. Finally, all three countries are positioned differently on Hofstede's (1980; 2001) cultural dimensions model. While the United States is a highly individualistic culture with high indulgence scores ("enjoying life and having fun"), Croatia and Thailand are collectivistic cultures with lower indulgence scores ("suppressions of gratifications"). Thailand is the most collectivistic of all three countries while Croatia is the least indulgent (see Figure 1). We expect that culture will influence how much time individuals spend using media, as well as their goals for media use (e.g., play vs. orientation).

### 1.1. Media system dependency theory and public health crises

Ball-Rokeach and DeFleur (1976) developed media system dependency theory, which holds that "the media system's control over information

resources engenders both media's interdependent relations with social systems (i.e., structural media dependency, macro-level) and individual dependency relations with the media (i.e., individual media dependency; micro-level)." This individual dependency on the media system, however, is determined more by structural dependency than by an individual's personal and socio-psychological characteristics (Ball-Rokeach, 1985). The media therefore affect how likely people are to develop a particular media dependency. Micro-level (individual) dependency explores the types of motivation that prompt individuals to use the media. Macro-level or social systems (e.g., country's economic, political, family, religious systems) likewise also influence media dependency.

Ball-Rokeach (1985) defined dependency as "a relation between individuals' goals and the extent to which these goals are contingent upon the resources of the media system" (pp. 494–495). When the degree of media dependency is high, media messages are likely to achieve cognitive, affective, and behavioral effects (Ball-Rokeach and DeFleur, 1976). The dependency relationship also intensifies during times of uncertainty or crisis, such as when one's social and natural environment appears to be threatening (Loges, 1994). Despite its similarity to the uses and gratifications framework in terms of the role of media in meeting audience needs, media systems dependency theory emphasizes how media meet audience needs, whereas uses and gratifications assumes an agentic and active audience member who intentionally seeks out media to fulfill specific needs (Loges and Ball-Rokeach, 1993).

At the micro-level, media systems dependency goals fall into three categories: understanding, orientation, and play (Table 1). Under crisis conditions, Lowrey (2004) argued that understanding and orientation are more apparent than play as individuals seek out information, relevance, and effects of the crisis. Play, however, is applicable when media facilitate tension release and emotional coping. During crises, however, the consumers may have different needs for information and coping, so understanding these differences can help practitioners understand how to disseminate messages and unveil to what extent the medium is the message. As Benoit (1997) asserted, in a crisis what is perceived by the public is sometimes more important than the reality.

#### 1.1.1. COVID-19 pandemic

Our review of literature reveals several studies dealing with media consumption during the COVID-19 pandemic. Muñiz (2020) conducted an online survey among Facebook users in Mexico to determine the level of media system dependency held by the Mexican citizens at the beginning of the crisis. Their findings revealed a moderate dependency together with a moderate risk perception among the population. Muñiz argued that this dependency tends to generate an increase in the risk perception through the consumption of television, digital press, and Facebook. Overall, although social media platforms are slowly replacing traditional media as the key tools for obtaining information (Casero-Ripollés, 2020), Muñiz concludes that television consumption continues to be crucial for an important part of the population. In their study, television consumption was positively associated with the fear of contagion.

Another study (Cauberghe et al., 2021) examined how adolescents used social media to cope with feelings of loneliness and isolation during COVID-19 lockdown. The study was conducted with Belgian adolescents (13–19 years old) and found that anxious participants used social media

**Table 1.** Typology of individuals' media system dependencies.

Understanding	Orientation	Play
<b>Self-understanding</b> e.g., learning about oneself and growing as a person	<b>Action orientation</b> e.g., deciding what to buy, how to dress, or how to stay slim	<b>Solitary play</b> e.g., relaxing when alone or having something to do by oneself
<b>Social understanding</b> e.g., knowing about and interpreting the world or community	<b>Interaction orientation</b> e.g., getting hints on how to handle new or difficult situations	<b>Social play</b> e.g., going to a movie or listening to music with family and friends

Ball-Rokeach and DeFleur (1979, p. 305).

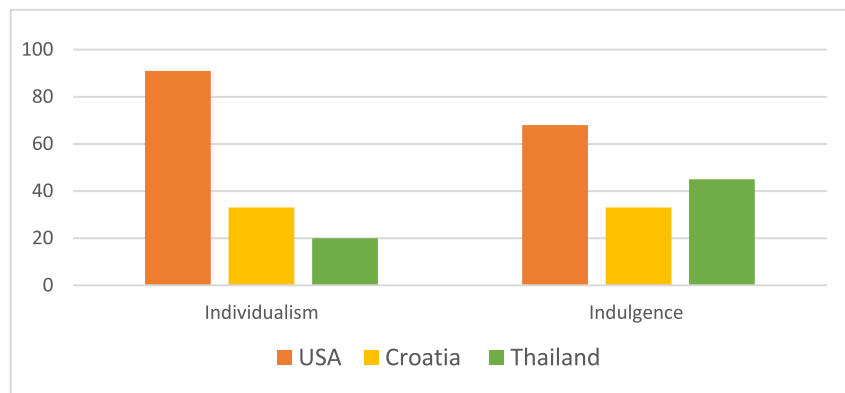


Figure 1. Differences between cultures on the values dimensions.

more often to adapt to the lockdown, and to a lesser extent to keep in touch with friends and family. However, participants who were feeling lonely were more inclined to use social media to cope with lacking social contact. Both Muñiz's (2020) and Cauberghe et al. (2021) studies were conducted in one country only and did not examine channel preferences during the pandemic as related to specific media dependency goals cross-culturally. Therefore, we pose the research question:

RQ1: What differences exist between and among participants from different countries (United States, Croatia, Thailand) in media use (in terms of hours spent with media, media channel preferences, and individual goals of media dependency) and interpersonal channels during the COVID-19 pandemic?

According to the media systems dependency theory, there are three goals for media use during crisis: surveillance, orientation, and play. We, therefore, further focus on specific goals for each channel during the COVID-19 health pandemic:

RQ1a: Which media and interpersonal channels did people use to acquire knowledge of the pandemic (surveillance/understanding goal)?

RQ1b: Which media and interpersonal channels did people use to connect with other people (orientation goal)?

RQ1c: Which media and interpersonal channels did people use to relax and de-stress (play goal)?

According to the structural influence model (Viswanath et al., 2009), structural determinants (e.g., socioeconomic status and geography) and mediating mechanisms (e.g., gender, age, and social network) can explain disparities in health communication outcomes, including one's well-being (Viswanath et al., 2007). Research shows that age, socio-economic status, education, income, employment, and occupation, are related to the use of media for health-related activities (e.g., Avery, 2010; Blake et al., 2011). We therefore pose a second research question:

RQ1d: During the COVID-19 pandemic, how did channel use differ among individuals from different social and demographic groups?

Finally, the pandemic provides a valuable opportunity to examine how users rely on media - and new media, in particular - to obtain information during an unfolding public health emergency. Specifically, dependency proclivities are likely to become apparent by examining where participants first heard about COVID-19, as well as how they responded to this information. We therefore pose the following research question to scrutinize the role that media and interpersonal channels played in orienting participants' to the health crisis:

RQ1e: What dominant themes characterize participant responses across the United States, Croatia, and Thailand when reporting how they first became aware of COVID-19?

## 1.2. Media effects on well-being during health pandemic

Recent studies on the impact of social lockdown linked quarantine to numerous damaging health outcomes, notably decreases in exercise and sunlight, irregular sleep habits, and mental health issues (Cellini et al., 2020; Ellis et al., 2020). One study of Italian young adults' media usage and sleep patterns found that media use before bedtime increased significantly during COVID-19 quarantine but was not associated with changes in sleep patterns (Cellini et al., 2020). Nevertheless, participants reported later bedtimes, later wake times, sleep latency, and lower sleep quality during quarantine. Low sleep quality was likewise found to be positively associated with depression, anxiety, and stress.

Another study of Canadian teenagers' social media usage and mental health in quarantine showed an overall increase in social media usage during lockdown, which was positively related to higher levels of depression and stress, but not loneliness (Ellis et al., 2020). The authors suggest this may be because interactions on social media mimic face-to-face interactions, and negative exchanges like arguments or cyberbullying may have contributed to increased stress and depression. Among Iranian participants, mental health issues such as stress and anxiety increased compared to before COVID-19, with higher levels of exposure and trust in social media associated with increased mental health problems (Mohammadi et al., 2020). One explanation may be that news reported on social media often focused on the consequences of COVID-19, and the accuracy of these reports was not well regulated. Conversely, exposure and trust in national media was linked to decreased mental health issues, possibly because local news stories tended to be more informative and educational instead of focusing on potentially untrue or sensational outcomes (Mohammadi et al., 2020). Informational and social need may therefore drive and explain dependency patterns among media users, and subsequently also account for overall mental and emotional well-being. No studies have examined the relationship between media use during the COVID-19 pandemic and individual's well-being across cultures. Therefore, we ask:

RQ2: During the COVID-19 pandemic, how did media use impact individual's well-being?

Finally, the open-ended responses provide the opportunity to probe specific affective and cognitive responses to news about COVID-19, including how exactly this information impacted participants' well-being. We therefore pose one last research question to explore these reactions:

RQ2a: What dominant themes characterize how participants in the United States, Croatia, and Thailand describe their well-being after learning about COVID-19?

## 2. Methods

### 2.1. Participants

A total of 860 adults from the United States, Croatia, and Thailand completed an online Qualtrics questionnaire. US participants included 335 adults (96 men, 235 women; 1 other sex, and 3 unidentified), ranging in age from 18 to 71 years (mean age = 39.82; SD = 14.01). Approximately 83% of participants self-identified as Caucasian, 4% as Black/African American, 3% as Asian, 3% as Hispanic/Latino, and the remainder (7%) did not identify with any provided categories. In terms of education, 31% of participants had a doctoral degree, 30% had a master's degree, 23% had a bachelor's degree, and 16% had less than a bachelor's degree.

Croatian participants included 274 adults (74 men, 194 women; 1 other sex; 5 unidentified), ranging in age from 20 to 68 years (mean age = 39.85; SD = 9.77). Of these, 7% had a doctoral degree, 31% had a master's degree, 17% had a bachelor's degree, and 41% had less than a bachelor's degree.

The Thai sample included 251 adults (119 men, 129 women; 3 unidentified), ranging in age from 20 to 66 (mean age = 39.42; SD = 9.37). Among these, 6% had a doctoral degree, 36% had a master's degree, 45% had a bachelor's degree, and 14% had less than a bachelor's degree.

### 2.2. Procedures

Following the Institutional Review Board (IRB) approval, participants were recruited using convenience and snowball/network sampling. Participants in this study had to be 18 years old or older, and working full-time or part-time in either the United States, Thailand, or Croatia. Two of the authors who were born in Thailand and Croatia recruited participants from these countries using personal email invitations and social media platforms including LinkedIn, Reddit, Facebook (groups dealing with COVID-19 and Facebook ads), as well as public listservs of professional organizations. Questionnaires were administered in English, Croatian, and Thai, and responses from the latter two were translated by the authors and also verified by other native Croatian and Thai speakers, respectively, to ensure translation quality and linguistic equivalence. Questionnaire responses were collected in April and May, 2020, and participants did not receive incentives for completing the survey. Before

beginning the Qualtrics questionnaire, participants signed the electronic consent form informing them that the study would take approximately 15–20 min to complete and that some of the survey items may cause a degree of psychological discomfort. The participants could skip any questions that made them feel uncomfortable.

### 2.3. Measures

Participants were asked to provide demographic and socioeconomic details, followed by questions measuring their media consumption (how many hours spent daily using media), media and interpersonal channel preferences, and motivations for using these channels.

To measure dependency, participants indicated how often they use media or interpersonal communication channels for each of the following reasons: “to keep up with the current issues and events,” “to stay connected with others,” and “to relax or de-stress.” Responses were measured on a 5-point Likert scale (1 = *never*; 5 = *always*), and also measured usage of specific media formats, including television, radio, newspapers, Internet, social media, text messaging, or friends and family.

Well-being was measured using the 5-item World Health Organization Index (WHO-5). WHO-5 is a short and generic global rating scale measuring subjective well-being (Bech, 2004) (e.g., “I have felt active and vigorous” and “I have felt calm and relaxed”). The WHO-5 has been found to have adequate validity in screening for depression and in measuring outcomes in clinical trials (Topp et al., 2015). Responses were rated on a 6-point Likert scale (1 = *at no time*; 6 = *all of the time*). Means, standard deviations, and Cronbach's alpha values for the well-being score of American, Croatian, and Thai participants are reported in Table 2.

#### 2.3.1. Qualitative analysis

Finally, an open-ended item collected information about how and where participants first heard about COVID-19, as well as their initial response to this information. A content analysis for emergent themes among open-ended responses was conducted using the content analysis software package WordStat (Ver. 6.1.10). This process utilized cluster extraction to identify high-frequency phrases within each country's dataset. Sentences that contained identical or extremely similar combinations and sequences of words yielded a cluster similarity index (CSI) score. For this study, we focused only on phrases that Wordstat identified as “tight clusters” - i.e., items that are extremely similar to each other - as opposed to “medium” or “loose” clusters. Higher CSI scores indicate that identified clusters occur more frequently in the same combination within the dataset. For instance, the phrase “heard it on social media” registered a CSI score of 6.62 among US respondents, when asked to describe where they first heard about COVID-19. This suggests that this particular

**Table 2.** ANOVA comparisons of media dependency goals by level of education.

Media Use Goal	Educational level	M <sup>1</sup>	SD
Surveillance	None or less than bachelor's degree	3.28**	1.09
	Bachelor's degree	3.76	.96
	Master's degree	3.79	.95
	Doctoral degree or equivalent	4.10**	.92
Orientation	None or less than bachelor's degree	3.78	1.15
	Bachelor's degree	3.90	.88
	Master's degree	3.89	.83
	Doctoral degree or equivalent	3.83	.93
Play	None or less than bachelor's degree	3.55	1.20
	Bachelor's degree	3.78*	.93
	Master's degree	3.63	.93
	Doctoral degree or equivalent	3.44*	.97

<sup>1</sup> \*on a scale from 1 (never) to 5 (always). \*p < .05 \*\* p < .01

**Table 3.** Hours spent with media during the COVID-19 pandemic.

	M*	SD	N
USA	4.36	2.62	309
Croatia	3.08	2.42	209
Thailand	4.16	2.60	204
Total	3.93	2.61	722

\* “During this pandemic, approximately how much time do you spend with media each day (including television, radio, social media, newspapers) from 0 to 10 + hours.

combination of words was dominant among US participants, and also by extension implies that social media play an important role in orienting these US users to new and evolving news reports. By contrast, the same text cluster only registered a CSI of 4.83 among Thai users, and was noticeably absent among Croatian respondents. These patterns suggest that US participants rely on social media for news more so than their Thai and Croatian counterparts, and may therefore be more susceptible to the structural features of these platforms that enhance or promote misinformation during an unfolding crisis.

### 3. Results

#### 3.1. RQ1: Media and interpersonal channels use during the COVID-19 pandemic

The first research question (RQ1) focused on differences in media and interpersonal channels use between participants from the United States, Croatia, and Thailand. A combination of descriptive statistics, analysis of variance (ANOVA), and Pearson product-moment correlations were utilized to answer this question.

Results of the ANOVA between-subject effects, revealed statistically significant differences among participants of the three countries in the daily number of hours spent using media during the pandemic,  $F(2,722) = 16.59; p < .001$ ; partial eta squared = .04. Americans spent the most time with media ( $M = 4.36; SD = 2.62$ ), and Croatian participants spent the least amount of time ( $M = 3.09; SD = 2.42$ ) (Table 3). The Bonferroni mean comparison test did not reveal significant differences between American and Thai participants in their overall media consumption ( $p > .05$ ). However, there was a statistically significant difference between the mean scores of American and Croatian participants ( $p < .05$ ), and Thai and Croatian participants ( $p < .05$ ).

Furthermore, we examined individual goals of media dependency during the pandemic. The main goal among the American and Croatian participants was to connect with other people (orientation goal) (Table 4), whereas it was to relax or de-stress (play goal) among Thai respondents. Surveillance (understanding goal) was listed as the second most important reason in the United States, while it was relaxation (play) in Croatia, and connecting with other people (orientation) in Thailand.

There were also cultural differences in the media dependency goals. Americans used media for surveillance more than Thai or Croatian participants;  $F(2, 711) = 13.90; p < .001$ . Thai individuals also used media to relax more than their American and Croatian counterparts,  $F(2, 680) = 5.50, p < .04$ . According to the post hoc comparison test, Americans and Croatians did not differ in how often they used media to relax. There

were no statistically significant differences among cultures in using media to stay connected with others,  $F(2, 692) = 2.88, p > .05$  (Table 5).

#### 3.1.1. RQ1a. Channel preferences for surveillance goals

Regarding channel preferences for acquiring knowledge during the pandemic (surveillance goal) (RQ1a), participants in all three countries relied on the Internet the most, followed by television, and then social media (see Table 5). The percentage of individuals who relied on the Internet and social media for surveillance was marginally higher among the American sample than in the other two countries.

#### 3.1.2. RQ1b. Channel preferences for orientation goal

In terms of using media to connect with other people (orientation goal) (RQ1b), Americans relied on text messages the most, followed by social media, and then friends and family (see Table 6). Croatian and Thai respondents primarily relied on social media and the Internet to connect with others during the pandemic. The most notable distinction between respondents from all three countries was that US participants relied on text messages to connect with others much more than did either the Croatian or Thai participants.

#### 3.1.3. RQ1c. Channel preferences for play goal

Regarding using media to relax or de-stress (play goal) (RQ1c), most Americans relied on TV (39%), followed by the Internet (36%) and social media (31.5%) (Table 7). Most Croatians used the Internet to relax (45.38%), followed by spending time with family (36.15%), and on social media (34.62%). Among Thai participants, the majority reported using the Internet (46.72%) and social media (39.42%) to relax and alleviate stress during the pandemic. Overall, whereas the Internet provided diversion for participants across all three countries, Thai participants reported significantly higher use of social media and the Internet to relax and relied on TV and family to relax far less than US and Croatian respondents.

#### 3.1.4. RQ1d. Channel preferences and socio-economic determinants

When examining whether channel use during the pandemic was a function of demographic and social factors (age, sex, education) (RQ1d), we found that the only variable that influenced this outcome across all three countries was age. The Pearson product-moment correlations revealed a negative relationship between age and the hours spent on media, and older people reported spending less time using media during COVID-19,  $r(686) = -.19, p < .001$ . However, the amount of time that participants spent using media during the COVID-19 pandemic did not differ by either sex or education level. However, education level was a significant factor for media dependency goals, and the ANOVA confirmed

**Table 4.** Goals for media use during the COVID-19 pandemic.

	Surveillance		Orientation		Play	
	M*	SD	M*	SD	M*	SD
USA	3.92	.98	3.95	.90	3.54	1.03
Croatia	3.44	1.15	3.81	1.04	3.52	1.19
Thailand	3.68	.97	3.76	.90	3.81	.74

\* on a scale from 1 (never) to 5 (always).

**Table 5.** The percentage of individuals using media and interpersonal channels to keep up with the current issues and events (surveillance goal) during the COVID-19 pandemic.<sup>a</sup>

	Surveillance Goal		
	USA	Croatia	Thailand
TV	38.2	18.61	22.31
Radio	16.12	4.01	1.59
Newspapers	15.52	2.92	5.58
Internet	54.93	32.48	23.90
Social media	37.61	15.69	21.91
Text messages	8.66	2.55	3.98
Friends	11.04	7.66	4.38
Family	15.82	6.93	3.59

<sup>a</sup> Respondents can choose up to eight channels, thus leading to column totals in excess of 100%.

that lower education levels (e.g., less than a bachelor's degree) tended to use media for relaxation more than surveillance, whereas the opposite was true for higher education levels (e.g., doctoral degree) who tended to use media for surveillance more than relaxation.

### 3.1.5. RQ1e: Role of media in awareness of COVID-19

Finally, we identified dominant themes to explore how participants in all three countries first became aware of COVID-19 (RQ1e). High-frequency media-specific terms among each cultural group pointed to some intriguing differences. Among US respondents, “news” registered the highest frequency (9% of the entire text dataset), followed by “media” (1.6%), “read” (1.5%), “watch” (1.2%), and “social” (1.2%). Specific media outlets appeared further down the list, including “Facebook” and NPR (both 0.6%). Corresponding high-frequency terms among Croatian respondents included “work” (7.6%), “TV” (7.6%), “news” (7.2%), “media” (5.8%), “internet” (4.3%), and “read” (1.1%). Thai participants recorded “TV” (7.8%), “news” (5.6%), “media” (5%), “work” (3.6%), “social” (2.4%), “internet” (1.9%) and “online” (1.4%). Among this subset, only one media outlet was specifically named: “Facebook” (1.6%). Taken together, these patterns point to similar patterns of media consumption, with a clear predisposition toward online and internet-based news. Among Croatian and Thai participants, “work” also featured prominently, indicating that these groups first heard about the pandemic while at work. Facebook also appeared to be an important news media source named by both US and Thai respondents, although not explicitly mentioned by Croatian participants.

The cluster analysis identified specific phrases that better illuminated media consumption patterns. Among US participants, tight clusters included “saw it on the morning news” (CSI = 11.64), “scrolling through Facebook” (CSI = 8.68), “at home watching the news” (CSI = 7.71), “on social media” (CSI = 6.68), and “heard about it on Reddit” (CSI = 5.62). Several US participants also confessed that they could not remember when exactly they had first heard about COVID-19, e.g., “cannot

remember the first time I heard about COVID-19” (CSI = 7.63) and “I don't really remember the first moment” (CSI = 6.71). Many US participants therefore were able to trace their first awareness of COVID-19 back to online, community-based, and non-traditional news sources - such as social media networks and Reddit - although traditional news programming (e.g., the morning news) still garnered some prominence.

Many Croatian participants admitted that they “do not remember” (CSI = 6.00) when they first heard about COVID-19, although others recalled that they “read on the internet” (CSI = 5.74) or first heard about the pandemic “from the media and internet” (CSI = 5.73). Others stated that they first learned about this disease “on the news” (CSI = 3.81), “at work” (CSI = 2.94), or “on TV” (CSI = 0.90). Overall, these patterns suggest a reliance on online news, although the notable absence of social media among these clusters points to a preference for more traditional news sources among this subset.

Thai respondents claimed that they either first learned “from different media channels” (CSI = 5.78), “from the TV news” (CSI = 5.87), or “from online media” (CSI = 3.69). Interestingly, many in this group specifically recalled first hearing “about it from Facebook” (CSI = 4.70) and “from social media” (CSI = 4.72), which corroborates the results for RQ1c. Thai respondents also indicated a preference for simultaneously sourcing information from multiple media sources, such as “heard from TV and social media” (CSI = 4.83), “from TV and the internet” (CSI = 4.83), and “from TV and Facebook” (CSI = 4.78). These patterns imply a relatively balanced media diet that combines both traditional media news sources (e.g., TV) and online non-traditional outlets (e.g., social media and Facebook).

In summary, whereas many American and Thai participants revealed that they first learned about COVID-19 from online sources, Thai respondents tended to draw on traditional and non-traditional media outlets for information. US users, on the other hand, displayed a reliance on community-based - and therefore less factually reliable - news sources. Croatian respondents indicated a preference for online news sources, and did not explicitly mention social media.

**Table 6.** The percentage of individuals using media and interpersonal channels to connect with other people (orientation goal) during the COVID-19 pandemic.<sup>a</sup>

	Orientation Goal		
	USA	Croatia	Thailand
TV	1.87	4.22	4.44
Radio	.74	2.11	0
Newspapers	2.2	.70	3.70
Internet	34.70	41.55	31.85
Social media	68.66	47.89	50.37
Text messages	70.90	28.17	17.77
Friends	41.04	25.35	17.03
Family	41.42	26.06	16.30

<sup>a</sup> Respondents can choose up to eight channels, thus leading to column totals in excess of 100%.

**Table 7.** The percentage of individuals using media and interpersonal channels to relax/destress (play goal) during the COVID-19 pandemic.<sup>a</sup>

	Play Goal		
	USA	Croatia	Thailand
TV	39.14	31.54	19.7
Radio	12.23	11.54	3.65
Newspapers	2.14	2.31	10.95
Internet	35.78	45.38	46.72
Social media	31.50	34.62	39.42
Text messages	17.13	11.54	10.22
Friends	29.36	27.69	16.06
Family	30.28	36.15	13.87

<sup>a</sup> Respondents can choose up to eight channels, thus leading to column totals in excess of 100%.

**3.2. RQ2: The relationship between media use and well-being**

RQ2 explored the possibility of a relationship between media use and participants' well-being during the COVID-19 pandemic. Results revealed that Thai participants scored the highest on well-being during the pandemic and Americans scored the lowest (see Table 8). Post hoc comparisons using the Bonferroni test indicated statistically significant differences between all three countries,  $F(2, 842) = 16.31, p < .001$ .

An intriguing pattern emerged only among US participants, specifically a significant negative relationship between time spent using media and reported well-being,  $r(307) = -.19, p < .05$ . This same relationship was not significant among Croatian and Thai participants. This finding may be the result of Americans spending more time using media during the COVID-19 pandemic, and also reporting the lowest well-being among the three cultural groups. In all three countries, though, there was a positive and statistically significant relationship between well-being and using media/interpersonal channels to connect with other people and relax (Table 8).

**3.2.1. RQ2a: Role of media in well-being common themes**

An analysis of open-ended responses shed more light on how learning about COVID-19 impacted participants' well-being. Consistent patterns emerged across all three nationalities, the most notable of these being anxiety and concern. Among US respondents, tight clusters included "I didn't think much of it" (CSI = 8.62) and "I was concerned" (CSI = 1.99). High-frequency terms included "concerned" (3.3% of the entire text data for this subset), "worried" (1.1%), "scared" (0.7%), and "attention" (0.6%). Yet, this group also registered high frequencies of terms that point toward the politicization of this health crisis, including "political" (3.9%), "question" (2.9%), "sources" (2.9%), "facts" (2.1%), and "Trump" (2.1%). Given the earlier finding that US participants drew much of their early information about the pandemic from social media, it is perhaps not too surprising that these dominant themes reflect the relatively opinionated perspectives associated with social media content, compared to traditional and typically more objective news sources.

Croatian respondents displayed more ambivalent responses to learning about the pandemic, such as "I worried" (CSI = 2.68) and "I wasn't worried" (CSI = 4.71). Interestingly, this group demonstrated distinct skepticism and cynicism toward the news media, as indicated by the tight clusters "too much fake news and data" (CSI = 4.43) and "too much panic, too much

contradiction" (CSI = 0.59). This dataset also registered fewer anxiety-laden responses to the unfolding pandemic, with only "worried" (3.5%), "fear" (3.1%), and "scared" (2.3%) emerging as high-frequency terms.

Among the three groups, Thai respondents indicated markedly greater negative or dysphoric responses to learning about the pandemic than their US and Croatian counterparts, including "I was alarmed" (CSI = 2.64), "I was afraid" (CSI = 3.84), "I was concerned" (CSI = 1.94), and "I was scared" (CSI = 3.72). High-frequency terms complemented these identified clusters, and included "concerned" (4.1%), "alarmed" (1.9%), "care" (1.4%), "afraid," "scared," and "severe" (all 1.3%). Thai participants also confessed to initial skepticism about the scale of the impending pandemic in responses such as "I didn't think it would be this serious" (CSI = 8.86) and "I didn't think it would spread this widely" (CSI = 9.81). Some participants also confessed that they initially "felt indifferent and thought it was distant" (CSI = 1.79) because they "thought it was not yet spreading in Thailand" (CSI = 9.57) or "because it was happening in China" (CSI = 9.74). Interestingly, unlike US and Croatian participants, there was a noticeable lack of skepticism and suspicion toward the news media among this group.

In review, whereas respondents from all three countries reported negative and anxious responses to learning about the pandemic from their respective media sources, US and Croatian comments differed from Thai responses in their distrust and skepticism toward media coverage of this health crisis. Such cognitive responses can prove detrimental - indeed, even fatal - when considering the role of the media in keeping the public informed and educated during a pandemic.

**4. Discussion**

There has been little research into understanding how audiences from different continents depend on media and interpersonal communication channels during a global health pandemic like COVID-19. Most prior research focused on health pandemics impacting East Asian countries. To address this lapse, the current study contributes to media systems dependency theory literature by examining differences in media use and interpersonal channel preferences during the COVID-19 pandemic between participants from the US, Croatia, and Thailand. All three countries differ in their cultural values, thus impacting the use of media during the health pandemic.

**Table 8.** Means, standard deviations, and cronbach's alpha of well-being, and its correlations with goals for media use by country.

	Goals					α
	Surveillance	Orientation	Play	M	SD	
Well-being (USA)	.09	.16**	.16**	3.39	1.13	.90
Well-being (Croatia)	-.01	.14*	.15*	3.67	1.26	.92
Well-being (Thailand)	.06	.18*	.18*	3.96	1.14	.92

\* $p < .05$ .

\*\* $p < .01$

#### 4.1. Overall media use and dependency goals during the COVID-19 pandemic

Our study revealed that the US citizens spent the most time using the media during the COVID-19 pandemic. This finding aligns with the claim that in countries such as the US, media serve a highly centralized social function (Ball-Rokeach and DeFleur, 1976). The media in the US are often described as the fifth estate or “fourth branch” of government. One likely explanation may lie in the individualist characteristic of US culture, and the accompanying tendency to pursue solo - rather than group-based - activities. Based on Hofstede's cultural dimensions model (2001), the US generally scores much higher on individualism than either Croatia or Thailand (see Figure 1). Croatia, in particular, scores much lower than both the United States and Thailand on indulgence (Hofstede Insights, 2020) (Figure 1), which could possibly explain why Croatians spent the least amount of time using media during the COVID-19 pandemic. This finding has important consequences because media agenda-setting effects may subsequently be heightened among those who are highly dependent on the media during a crisis (Ball-Rokeach and DeFleur, 1976). US participants might therefore have perceived COVID-19 to be a far more dire threat than Croatian participants. As our results reveal, US participants used the media for surveillance goals more than their Thai or Croatian counterparts. In addition, the US sample scored the lowest on well-being, which in turn was significantly and negatively related to the number of hours spent using the media. Two other studies (Ellis et al., 2021; Mohammadi et al., 2020) conducted with the participants in Italy and Iran also found a positive relationship between the media use during the COVID-19 pandemic and the participants' stress levels. However, our study goes further and focuses on the goals of media use.

Another interesting cultural difference was that Thai participants reported using the media to relax or de-stress more than Americans or Croatians. This finding contradicts Lowrey's (2004) argument that, during a crisis, goals of understanding and orientation are more prominent than the goal of play. This finding may be attributable to the general predisposition toward easy going, laidback, and fun-loving approaches prevalent among many Thai groups (Chantarasukas, 2007; Hays, 2014; Komin, 1990). In Thai culture, work is interspersed with play, and “sanuk” (meaning “having fun” or “enjoying oneself”) is considered a Thai “way of life” (Chantarasukas, 2007; Weiner, 2015). The pursuit of pleasure is evident in Thai media such as Thai TV dramas (Karalak, 2014) and TV commercials (Punyapiroje and Morrison, 2007). These cultural values and the propensity for enjoyment and relaxation may endure even during times of crisis, which may explain why the Thai sample reported a higher dependency on media and interpersonal channels for relaxation than the US and Croatian samples. In turn, this tendency might also prompt more effective emotional coping and well-being strategies (Ball-Rokeach, 1985) than respondents from the other two countries. As our results show, well-being is significantly and positively correlated with the use of media and interpersonal channels for relaxation.

Moreover, our results showed that participants in all three countries used media and interpersonal channels to stay connected with others at approximately the same frequency. No significant differences were found in media use for this orientation purpose. This is likely due to the social distancing and lockdown measures that were enforced globally during the early stage of the pandemic. Given traveling restrictions and limited face-to-face interactions, people regardless of culture plausibly became dependent on the media to fulfill their needs for social connection and relational maintenance. This helped their well-being. As Lowrey (2004) found during the months after the September 11 attacks, the vast majority of the American citizens were “in the same boat.”

#### 4.2. Channel preferences during the COVID-19 pandemic

Past studies have found that individual differences and needs (Avery, 2010) guide channel preferences and selection. Our results revealed that social media and the Internet were the primary channels utilized during

COVID-19, regardless of dependency goals. This is not surprising given that the average age of study participants was 39 years. In addition, isolation and quarantine guidelines impelled many to connect with others online and through social media. Facebook was an important news media source for both the U.S. and Thai participants. This finding corroborates recent data from statista (2020), which estimates that US social media usage increased while physical distancing at home.

Considering the invaluable support that interpersonal channels might offer during the pandemic (Major, 1998), and given that these channels are often overlooked in health communication literature, we opted to include family and friends in the survey about channels used during the pandemic. Results reveal that friends and family most often fulfill orientation and play goals, although they were not considered more important than social media. This finding might reflect lockdown and quarantine measures across all three countries during the COVID-19 pandemic, since the participants may have had to rely on social media to communicate with family and friends.

Another prominent difference among the three countries is that US participants used text messages (70.9%) for orientation a lot more than Croatian (28.17%) and Thai (17.77%) participants. According to a global report from Informato (2015), Americans' texting habits are in stark contrast to several other countries, including Thailand, where VoIP apps such as LINE, Facebook Messenger, Skype, and WhatsApp tend to be more popular. Other media systems dependency studies (e.g., Lowrey, 2004) have also found that habit of use and familiarity with format encourage reliance on certain media types.

The open-ended responses provided insight into how participants first heard about COVID-19, and revealed a clear predisposition toward online and Internet-based news. We found that Thai participants relied on online as well as traditional news sources. This complements a recent study which confirmed that Thai people watched TV more often in the early periods of the COVID-19 pandemic to gain up-to-date information about the disease (Boonrod, 2020). However, as the pandemic's effect weakened in this country, Thai users tended to gravitate more toward online media for a variety of entertainment (Boonrod, 2020). The authors conclude that television is still influential particularly among those in provincial areas and older adults, whereas digital media are influential among younger users.

The Croatian sample recorded far fewer mentions of social media with regard to how participants first heard of COVID-19. This might be due to the cultural differences in motives for using social media. For example, Hsu's et al. (2015) study of Facebook users in five countries (Australia, Austria, Japan, Taiwan, and the US) revealed that whereas information-seeking was a stronger predictor of continuance intention among the users from individualistic cultures, socialization had more influence on continuance intention for collectivist users. As reported in Table 5, only 15% of Croatians and 21.91% of Thai participants used social media for surveillance purposes. However, this number was much higher among Americans (37.61%). Sheldon, Rauschnabel, Antony, and Car (2017) also found that Croatian students' use of social media reflects collectivistic tendencies (using social media for social interaction), while American students' use of social media reflects individualistic trends. As a largely collectivist culture, therefore, it is likely that lower social media use among Croatian respondents reflects sourcing information about the pandemic from sources other than social media.

#### 4.3. Structural influences and media use

Among all the structural determinants included in our study, age most significantly impacted the number of hours spent using media, while educational level influenced media dependency goals. Thus, in all three countries, older individuals reported spending less time using media, a finding that aligns with prior studies (e.g., Pew Research Center, 2017) about adoption rates of technology among seniors. In addition, individuals with lower education levels reported using media primarily for relaxation, while higher educated participants reported using media



mostly for surveillance goals. This aligns with past studies showing that basic media proficiency is higher among highly educated families (Nikken and Oprea, 2018), who also tend to consume informative and educational television programming (Calvert et al., 2005).

#### 4.4. Relationship between media use and well-being during the COVID-19 pandemic

When probing the relationship between media and participants' well-being during the COVID-19 pandemic, we discovered that the number of hours spent using the media was negatively related to well-being. However, this relationship was significant only within the US sample, and may reflect increased media usage among US participants overall, compared to those from Croatia and Thailand. This finding may also be indicative of participants' media dependency goals and channel preferences.

As explained above, US participants reported using media for surveillance purposes significantly more than Croatian and Thai participants - surveillance goals were not related to well-being, compared to orientation and play goals which were positively related to well-being. As they utilized the media primarily to understand the extent of COVID-19 and its unfolding impact on daily life, US participants might have frequently encountered stress-inducing statistics, conflicting information, or other details that increased uncertainty about the pandemic. The cluster analysis revealed the prevalence of anxiety, skepticism, and lack of trust in media coverage about the pandemic. All these factors may explain why increased media usage among US participants was linked to lower reported well-being.

Additionally, specific media channel preferences may account for the link between high media use and decreased well-being (Ha et al., 2013). US participants revealed that they depended on social media and online news more than their Croatian and Thai counterparts, and particularly on community-based and potentially less reliable news sources (e.g., Reddit). Recent COVID-19 research (e.g., Ellis et al., 2020; Mohammadi et al., 2020) has revealed that an overall increase in social media usage during lockdown was related to increased mental health problems, including higher levels of depression and stress.

Croatian participants reported greater well-being than US participants but lower than Thai participants. This pattern may stem from the fact that Croatians used media mostly for social connection with others, which was positively related to well-being. However, there was a prevailing cynicism and skepticism regarding the scale and impact of the pandemic among Croatians, who mentioned "fake news" and "too much panic" in their open responses. This distrust may explain why media usage was linked to comparatively lower well-being than among Thai respondents. Among all three countries, Thai respondents reported using multiple media channels for multiple goals, and especially for relaxation purposes. Thai participants also indicated greater reliance and trust in authorities for accurate information. The combination of these factors - namely, lower skepticism toward experts and local authorities and using media to destress or relax - may account for why media use among Thai participants was linked to the highest level of well-being in this study.

#### 4.5. Practical implications

Our findings have several practical suggestions for public administrators and media professionals. First, during a highly uncertain and stressful health crisis such as COVID-19, the public should be simultaneously encouraged to use media and interpersonal channels for orientation and play purposes as these media dependency goals are positively related to the well-being of participants across cultures. Second, this study indicates prevailing skepticism about the accuracy of media information and coverage about the pandemic, particularly in Croatia and the US. This disturbing finding has serious health policy implications for creating and disseminating guidelines and information about the pandemic, and points to the need to develop effective strategies to combat distrust and ultimately save lives. Third, following the media systems dependency theory emphasis that media should meet the needs

of its audience (Loges and Ball-Rokeach, 1993), this study highlights regional variations in how media fulfilled the needs of participants in each country. In Croatia, media programs that are family- or relationship-oriented have a higher potential to meet public needs during this crisis. In Thailand, entertainment programs that help people de-stress during this crisis are likely to fare well. In the US, media programs that provide accurate information about the pandemic would help answer the surveillance needs of the US public. Media producers should therefore account for regional variations in dependency goals when designing and disseminating health-related messages and campaigns.

#### 4.6. Limitations and suggestions for future research

One major limitation of this study is its reliance on convenience and snowball sampling, which resulted in a disproportionate number of highly educated individuals in some regions (US sample) and lower educated individuals in other regions (Croatian sample). In addition, both the US and Croatian samples included significantly more women than men. Future studies should strive for a more representative sample of the population. Upcoming research might also include other sources of information (e.g., cell phones, neighbors) that participants are likely to utilize during the COVID-19 pandemic that were not included in our questionnaire. We also recommend the use of an SNS dependency scale (Kim and Jung, 2017) to capture the degree to which individuals are connected to an SNS in their everyday lives. Scholars should also further probe the role that friends and family play in providing support and information during this health pandemic. While we did not directly measure individual participants' scores on Hofstede's cultural dimensions of individualism and collectivism, future research should address this, particularly given the strong cultural influence on media consumption patterns during the pandemic.

## 5. Conclusion

This is the first study to utilize media systems dependency theory (Ball-Rokeach and DeFleur, 1976) to understand how participants from different countries consumed media during an unprecedented global pandemic in the 21st century. Our results highlight the strong influence of national culture, including technological infrastructure, on media use, preferences, and effects during a pandemic. US participants used text messages to connect with others during the pandemic to a much greater extent than Croatian or Thai participants. Americans also relied on social media and the Internet the most, and their primary goal for media use was surveillance. By contrast, collectivistic Croatians did not depend on the media as much as US or Thai individuals, and also expressed distinct cynicism toward news media. Finally, Thai participants reported a higher dependency on media and interpersonal channels for relaxation purposes compared to both other groups. This, in turn, contributed to the highest reported well-being among the Thai sample. These findings support the media systems dependency theory, and also provide practical recommendations for public administrators and media professionals in how to respond during this ongoing global health crisis.

## Declarations

### Author contribution statement

Pavica Sheldon: Conceived and designed the experiments; Performed the experiments; Analyzed and interpreted the data; Contributed reagents, materials, analysis tools or data; Wrote the paper.

Mary Grace Antony: Analyzed and interpreted the data; Wrote the paper.

Piyawan Charoensap-Kelly: Conceived and designed the experiments; Performed the experiments; Wrote the paper.

Sarah Morgan, Laina Weldon: Contributed reagents, materials, analysis tools or data.

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### Data availability statement

Data included in article.

### Declaration of interests statement

The authors declare no conflict of interest.

### Additional information

No additional information is available for this paper.

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