디지털 미디어의 네트워크 속성이 참여 활동에 미치는 영향에 대한 연구: 아미 네트워크의 개방성과 유대감을 중심으로

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A Study on the Effects of Digital Media's Network Attributes on Participatory Behavior: Focused on the Openness and Bonding of the A.R.M.Y Network

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[요 약]

본 연구는 디지털 미디어의 네트워크 속성과 참여적 사회 행동 사이의 관계를 파악하는 것을 목적으로 한다. 구체적으로 디지털 공동체가 이용하는 미디어의 네트워크 속성인 개방성과 유대감에 주목한다. 본 연구는 디지털 미디어를 이용하면서 BTS의 사회적 메시지를 적극적으로 실천하고 있는 디지털 공동체인 아미를 연구 대상으로 삼아, 심층 인터뷰와 설문 조사를 통해 질적 방법과 양적 방법을 통합한 연구를 시도하였다. 연구결과, 아미 공동체는 콘텐츠의 저장고인 유투브와 BTS 멤버들을 실시간으로 만나는 브이 앱, 팬 공식 사이트인 위버스, 그리고 소통용 플랫폼인 트위터 등의 디지털 미디어를 이용하면서, 참여적 사회 행동을 수행하고 있다는 사실을 확인하였다. 특히, 외부에 대한 개방성을 의미하는 디지털 미디어 네트워크의 연결적 속성은 공동체 내부 구성원들 사이의 유대감을 의미하는 결속적 속성에 비해 사회 참여에 더 큰 영향을 미치고 있었다. 디지털 네트워크는 공동체적 속성보다 개방적 속성이 네트워크의 공중으로서 가능성을 결정하고 있다는 사실을 확인하였다.

[Abstract]

In this study, we aim to identify relationships between characteristics of digital media-using communities and pro-social collective behavior, paying particular attention to the openness and bonding, the network attributes of the digital media used. We focus on ARMY, the official fandom of K-pop supergroup BTS, as a research target. We integrate qualitative and quantitative methods including in-depth interviews and surveys to confirm that the ARMY community mainly uses Twitter (the most popular social media network), YouTube (a repository of content), V-Live (to virtually meet with BTS members in real time) and Weverse (an official fan platform). The bridging properties of external openness of networks had a greater impact on ARMY's participation in society than did the bonding properties of members. These findings indicate that the openness of a social media network is an important clue to explaining its possibility as the public.

Ⅰ. Introduction

K-pop supergroup BTS released three songs in 2020, "Dynamite," "Savage Love," and "Life Goes On," that consecutively topped the U.S. Hot 100, Billboard's main single chart. BTS also topped the Billboard 200 album chart four times in a row, which is a singular achievement in the history of pop music. ARMY, the global fandom of BTS, has played a decisive role in promoting BTS to the world, and is expanding its social influence by implementing BTS' message.

In a 2019 speech to the United Nations, the phrase "Speak Yourself" was used to encourage fans to take participatory action, and similar lyrics from a BTS song are sometimes used at overseas demonstrations[1]. "One in an Army," a charity founded by ARMY, encourages fans around the world to make direct contributions to society[1]. Impressed by BTS' message of hope directed to the underprivileged, the ARMY community promotes this message directly through collective practice.

The digital network of fandom community interacts in a virtual world that operates according to norms and structures different from real life interactions[2][3]. The common culture that fandom members experience through digital media has a close relationship with the social participation of individual fans. Therefore, determining the characteristics of the social media networks used within the community may provide useful clues to understanding active participation in online public spaces. Fans who act collectively based on participatory culture in online communities are not much different from members of the public living in a digital era[2].

Many researchers have conducted studies focusing on digital community's social influence[2][3]. However, empirical studies of the characteristics of digital network and how they affect social participation remain rare, as do studies identifying features of communities using online and social media that affect their social influence. Therefore, identifying relationships between characteristics of digital media-using communities and participatory social behavior may be interesting.

This is an exploratory study on the effects of digital media's network attributes on participation, focusing on the openness and bonding of the BTS fandom, ARMY, as a specific case through the mixed methodology of qualitative and quantitative research. In STUDY 1, we conducted in-depth interviews with ARMY members while in STUDY 2 we performed a survey to generalize our findings of STUDY 1.

Ⅱ. Theoretical Backgrounds

2-1 Digital Network Community

Advances in digital technology mean that fans have a wide variety of media to choose from, such as websites, video channels, fan sites, forums, and social media networks[4]. Fans interact daily through the media, engaging in online discussions related to their interests and engrossing themselves in certain music genres, products and issues. Through this process, fandom communities provide members with virtual spaces in which to establish relationships and communicate with other fans who share common interests[4]. Digital technology greatly extends fandoms as communities[5].

In particular, social media is well suited to the social activities of fandom[6]. Fans manage friends by expressing themselves and linking relationships with other members while forming strong relationships with celebrities[6]. Fans form groups to carry out social activities through social media rather than participating in weekend fan rallies that physically move or fan sites where they have to read large amounts of content generated by others[6]. Digital technology enables fandom members to operate within a much different structure than in the pre-digital era[7]. The potential of digital fandom as a social community can be illustrated above all by the organizational characteristics of fandom.

Online community organizations are based on self-ethical norms[8][9]. Individuals determine the norms of the community on their own[9]. They move away from hierarchical vertical structures, forming communities into horizontal structures that are autonomously connected around sharing and collaboration[8]. Members of the community engage in collective action based on group values while incorporating these values into their own[2]. Such collective behavioral performance, which is the essential characteristic of the fandom community[2], is revealed in a unique way.

Individual fans use various methods to extend their interests into the public domain. Specific tactics employed to induce other fans to participate are consequently the same as the communication methods used by individuals, such as analyzing text, processing information, and sharing information with other members while searching for the necessary information[6]. Fandoms create basic conditions to participate in collective action by improving their ability to communicate and network with other fans within their community[3].

2-2 Types of Capital in Digital Network Community

In the community, individual fans work to gain psychological rewards such as individual self-esteem or recognition from others rather than economic rewards[8]. In particular, fans in the online

space form communities through a process called gift exchange[10]. The principles of not seeking profit and not hurting anyone have so far been maintained within fandoms regarding the notion that profit-seeking or compensating actions are inappropriate[10].

However, the image of friendly and egalitarian fandom communities[6] is different from reality. Hierarchy and tension always exist within fan communities[11]. Fans are in the paradoxical situation of sharing common interests with their fan targets while competing for access to them, knowledge related to them, and their status within the community[11]. As a result, hierarchies specifically regarding various types of capital are present within fan communities[4]. Bourdieu pointed out that such capital is unevenly distributed in the form of economic, social, and cultural capital[12].

Fans use various forms of capital to take initiative. They define their own identities within a community by exerting effort and enthusiasm for their fan targets (psychological capital), by having knowledge about the fandom (cultural capital), by establishing relationships with important people within the fandom (social capital), and by investing in a fan target in ways such as consuming official goods (economic capital)[4][11].

Research on brand fandoms specifically address how fandom communities utilize cultural capital and social capital in online and social media spaces[13][14]. Members share the feeling that they are together, emphasizing bonds within the community [13]. Fans maintain the community by welcoming and integrating new members and feeling a sense of responsibility for the entire community[13]. As a result, the community provides them with both cultural and social capital in the process of forming its collective norms[14].

According to a recent study of the BTS and Super Junior fandom, fans use media to invest in cultural capital, such as purchasing albums or goods and buying concert tickets, and to build social capital through the formation of relationships and the recognition of social hierarchy and identity within the community[4]. While the cultural capital of an individual fan can be used to build new social relationships around common interests, social capital makes it easy to form cultural capital representing new knowledge related to the fandom[4].

2-3 Digital Network Community and Participation

Some scholars argue that the effects of online interaction are negative for the formation of social capital because online interactions consume limited time[15], while others suggest that the online space fosters social activities and expands them to the real world[16]. In this paper, the social networks experienced by individuals using digital media are classified into two types

following Putnam[17]: bridging networks and bonding networks. A bridging network is an open and inclusive network where emotional bonds are weak, whereas a bonding network is an exclusive network of strongly connected individuals[17]. Online spaces are inherently suitable for the formation and maintenance of weak ties between members [18]. In contrast, anonymity and interactivity, which are characteristics of online spaces, also induce strong bonds between members because they easily link people to common interests[19]. Digital spaces can foster unique interactions because they bring together various members in ways that transcend demographic, sociological, regional, and cultural differences. The relevance of bridging and bonding networks to social capital is of great concern to scholars[20]. In this context, how types of networks and social media used by fandom are related to participatory social capital is an interesting research issue.

RQ> How are digital media's network attributes (bridging vs. bonding) related to participatory social behavior?

2-4 Types of Social Participation

In terms of collective behavior, Putnam specifically divided social capital into three types: social activities related to community interests, donation and charity activities based on altruism, and civil movements oriented toward public interest, human rights, and social justice[17]. In this study, we explain different types of social participation among the BTS fandom by applying characteristics of collective behavior of the community, centering on the three types of collective behavior described by Putnam[17], while considering the four dimensions below, derived from the existing literature.

First, social participation can be divided into active or passive participation based on spontaneity. A fandom can be defined as a voluntary community based on membership and shared emotional connections[21]. Second, the persistence of participation plays an important role in determining the nature of participation: whether one simply participates in social action or steadily determines the outcomes of participation[22].

Third, social participation can be classified according to participation in online virtual spaces and participation in terms of actual action in real space[2]. Recently, fandoms have formed communities that transcend time and space through online and social media. On the other hand, participation in the real world includes various forms of collective action, ranging from idol performances, events, regional assemblies, to protest rallies and street demonstrations. Therefore, the participatory social behaviors of fandoms can be examined in four dimensions: voluntary, continuous, online, and offline.

Ⅲ. Methodology

Qualitative and quantitative methodologies were used together from independent perspectives and the results obtained using both methods were blended for analysis[23]. We focus on the ARMY, which uses online and social media to practice BTS values through collective action, as a specific case of a fandom community that uses digital media.

Ⅳ. STUDY 1

4-1 Sampling and Procedures

In this study we conducted 20 in-depth interviews. The age distribution ranged from 13 years to mid-50 years, and the occupations included an elementary school teacher, students, office workers, professional jobs (an announcer, a writer, a producer), and stay-at-home wives. Males are underrepresented in ARMY, and we interviewed only two male ARMY members. In-depth interviews were conducted from September 10 to October 25, 2019, mostly face-to-face except for ARMY 2, 8, and 9, who were interviewed over the phone. Each interview took an hour and a half on average.

4-2 Results

Most of the ARMY members first discovered BTS on YouTube, a vast repository of BTS content that allows ARMY members to view relatively long videos such as BTS music videos, behind-the-scenes fancams, and BTS' own channel, at any time. In contrast, V-Live is a unique platform through which BTS members directly broadcast in real time. Although there is little contact with other fans, BTS members, even if their personal information is not directly disclosed, often show their human selves while telling behind-the-scenes stories about the songs. For fans, the way BTS looks on stage and the way they look on V-Live is completely different. Unlike YouTube, V-Live seems more private to ARMY members.

A college student, ARMY since 2014, would find videos related to BTS with his friends in the past, but these days he shares videos when alerted to him on Twitter. As online content is quantitatively abundant, fans experience information more efficiently by sharing images or news within the ARMY network. Sharing information in daily life is a realistic way to become a fanatic. Weverse, the official BTS fan site, was newly launched in 2019 and has characteristics of both an official site and Twitter. Weverse provides abundant information about BTS, such as video content and writings and selfies from BTS members, and builds the ARMY community by taking advantage of an open network. This ironically has the effect of dismantling the existing community, which used to have its own identity. The recent influx of older and younger fans into the ARMY community has caused its unique identity to gradually disappear. A twenty two-year-old ARMY confesses, "My aunt can't recognize the faces of BTS members, but she says she is an ARMY."

Currently, the ARMY community using digital media is highly diverse. The type of fandom also varies because BTS fans are attracted to BTS's strong charismatic image as well as their friendly neighborhood image. The broad spectra of fandoms subsumed within the ARMY community comprises myriad networks of small groups, which fosters social capital. In terms of social capital, The ARMY community is open-minded outside, which is a bridging property, and connected inside, which is a bonding property. An office worker of 31 age began ARMY activities because she liked the openness of ARMY. "We got close quickly because of the homogeneity of liking something together. The feeling of being open was nice." Since she publicly announced herself as an ARMY member at work, she realized that her status in the company has risen in line with BTS' global popularity. The moment one declares oneself as ARMY, one comes to identify oneself with BTS. The ARMY community features an open culture referred to as 'Anyone Together.'

A male office worker hesitated to actively engage in ARMY activities due to social prejudice. However, watching reaction videos posted by male ARMY members overseas on YouTube, he had confidence that "I'm one of the male fans who like BTS." If he hadn't seen YouTube videos, he would have limited himself to listening to BTS music without participating in any ARMY activities. The ARMY culture welcomes any fans regardless of age or gender.

Twitter is the communication platform that most ARMY members use to contact BTS members privately. It is an official channel of communication that connects stars and fans directly, and a place where fans communicate with each other [24]. Twitter use can easily expand a fandom community because it offers anonymity without taking the source of information seriously[25]. Jenkins also emphasized its usefulness as a platform for expressing oneself while sharing information[6]. In other words, Twitter users can express themselves by choosing the specific community that fits them. When people communicate in Twitter, the way they express themselves becomes similar. Bonds formed within Twitter are "very close and even exchanging phone numbers, and participating in events together" (ARMY 7, a high school student, 16). Working environments online or in social

media spaces is strongly influenced by community culture, which is based on the message and social values of BTS.

"I usually use Twitter, YouTube, and Weverse. I'm not lonely at all. And there's all the information I want. I always feel like I'm with ARMY. I think it's natural to do something together because of the environment around me" said ARMY 4, an office worker of 28 age. All ARMY members do things together and share experiences in the name of ARMY. There are online events to celebrate the birthdays of BTS members or to donate coffee proceeds in the name of ARMY. Individual fans are one among many, but still experience the ability to make changes in society[25]. The psychology of fans participating in social activities is based on spontaneity and efficacy of acts[26], and the satisfaction experienced by fans in this process leads to social capital[27].

The ARMY is not just a fandom organization, but a community of social practices. In reality, it is not easy for an individual who sympathizes with the social message advocated by BTS to practice it alone. "If I suddenly try to do volunteer work, people around me will ask. I think it's very important that I have friends who feel the same way" (ARMY 1, a writer, 42). The confidence that an individual fan has in the community extends from a sense of belonging, which leads to voluntary fan behavior[28]. Individual ARMY members exhibit interests in social issues that are greatly influenced by other ARMY members, who they meet through digital media. ARMY 4, an office worker, learned about social issues through ARMY-related posts on Twitter, such as a big fire in the Amazon or a massacre in Africa. The openness of the ARMY community provides opportunities for ARMY members to participate in society. On the other hand, when certain issues are publicized within the community, individual fans are not free from the influence of the community because individual fans are active within the community, which means that they experience social norms through interactions with other fans[29].

Last winter, ARMY 19, who had seen other ARMY members heeding BTS' messages and volunteering, felt ashamed that she had not volunteered herself and engaged in volunteer work for the first time since joining the ARMY. She joined other members working in a nursing home making kimchi. "I am doing it under the name of ARMY. It's possible because there are ARMYs around me." (ARMY 19, an office worker, 31). Within the ARMY community, individuals are free to transform themselves into leaders, organizers, and followers, while flexibly choosing their own identity[30]. The important thing is that members work in horizontal relationships rather than vertical hierarchies[30]. The open and equal relationships between members of digital fandoms induces friendly interactions and bonds between members.

In conclusion, various digital media used by ARMY member, such as YouTube, V-Live, Twitter, and Weverse, have qualities of both bridging and bonding properties, leading ARMY members to move toward societal practice. It is necessary to take a full-fledged look at the relationship between the properties of the network and social participation in digital media that ARMY actually uses, which has confirmed the results of <STUDY 1>. In <STUDY 2>, we will break down the RQ to specifically understand the relationship between the network attributes (bridging vs. bonding) of each digital media and the fandom's social involvement.

RQ -1> How do Twitter's network attributes of a fandom community relate to participatory social behavior?

RQ -2> How do Youtube's network attributes of a fandom community relate to participatory social behavior?

RQ -3> How do Weverse's network attributes of a fandom community relate to participatory social behavior?

RQ -4> How do V-Live's network attributes of a fandom community relate to participatory social behavior?

Ⅴ. STUDY 2.

5-1 Methodology

1) Survey and Data

The survey was conducted on October 26, 2019 among fans who gathered for a BTS concert at Olympic Main Stadium in Seoul, Korea. Fifteen researchers at the site helped participants to access a Google Survey with a QR code. If the survey response time was shorter than five minutes, the researcher did not submit the results. The total number of surveys gathered was 259, of which 252 surveys were analyzed.

2) Survey Composition

The respondents first identified whether they were ARMY members or not. They were asked about demographic information and questions related to ARMY activities. A standard scale used in fandom research[31] was used to measure degree of belonging (3 items, 5-point Likert scale; e.g., "The fact that I am ARMY is important to me"). The survey also confirmed hours spent online and using social media for fan activities. Subsequent questions addressed the bridging and bonding nature of digital media, as well as voluntary, continuous, online, and offline participatory behavior.

3) Operational Definitions and Measurements
3.1) Network Attributes of Digital Media

The measurements were adapted following Williams[32], in which an ISCS was developed to measure the network attributes of the online community, and Keum[33], who utilized it for social media. The questions regarding bonding networks were as follows: "Among ARMYs who communicate online or through social media, 1) There is someone who can help me solve my problem; 2) who I can ask for advice when I make important decisions; and 3) who I can talk to when I feel lonely." Meanwhile, questions about bridging networks were as follows: "ARMYs who communicate through digital media 1) Make me try something new; 2) Make me become interested in people who have different thoughts than me; and 3) Make me curious about the other world."

3.2) Participation in Social Collective Action

The measurements we used applied insights from the existing literature[2][22], centering on Putnam's concepts of social activities, altruistic collective activities, and civil movements[17]. Specifically, we measured the degrees of spontaneity, persistence, online participation, and offline participation about Putnam's three types of social collective action. All items are measured on a 7-point Likert-scale.

4) Data Analysis

The collected data were analyzed using SPSS 21.0. The reliability and validity of measurement items were verified, and the control effects were confirmed through hierarchical linear analysis; the research problems through regression analysis.

5-2 Study Results

1) Participants

Of the 252 ARMY members surveyed, 94.4% were women. Age groups included teenagers (41.3%), 20s (36.9%), 30s (12.7%), 40s (7.1%), and 50s (2.0%). We asked participants to report hours of digital media use for fan activities, including Weverse (fan official site), Twitter, Instagram, Kakao Talk, Band (community messengers), Facebook (social network site), YouTube (video site), and V-Live (live service). The following were used for more than two hours a day (duplicate responses possible): Twitter (129 respondents, 51.2%), YouTube (102, 40.5%), Weverse (74, 29.4%), and V-Live (69, 27.4%).

2) Validity of Variances

All of the average variance extracted (AVE) values of variables were greater than 0.5, meeting the criteria for concentration validity[34]. The variables were also determined to meet the discriminant validity, meeting the conditions under which the AVE value should be greater than the square of the coefficient of correlation with other variable[35].

3) Measurement of Controlled Variances

By injecting demographic and sociological factors (gender, age, education level, cost of fan activities, duration of fan activities, and media usage time) as control factors, control effects were examined through hierarchical regression analysis when media network attributes affected participatory social behavior. The explanatory power of Model 2 (R^2=0.524) in which an independent variable was injected with control variables was increased ($\triangle R^2$=0.291) relative to that of Model 1 (R^2=0.232) before the independent variable was injected, which confirmed that the control variables were controlled.

4) Results

Regression analysis was conducted with the network attributes (bridging/ bonding) of media as an independent variable and participatory social behavior as a dependent variable to verify the research question (Table 1). The bridging and bonding network attributes of digital media experienced by the ARMY community were identified as having positive influences on participatory social behavior: voluntary, continuous, online, and offline participation (p=0.000).

We then verified how the network attributes of Twitter, the social medium used most often by the ARMY community, relate to participatory social behavior. Multiple regression analyses were conducted among ARMY members (129 individuals) who used Twitter for more than two hours per day (Table 2). When Twitter's bridging and bonding network attributes were injected at the same time, the bridging network attribute yielded significant results for all participatory social actions, while the bonding network attribute yielded no significant results except for continuous participation (p<0.05).

Subsequently, we examined how the two types of network attributes were related to social participatory behavior among users who accessed YouTube, Weverse, and V-Live for an average of more than two hours a day (102 individuals on YouTube, 74 on Weverse, and 69 on V-Live). When two network attributes were injected at the same time, the bridging property of YouTube had significant consequences for all participatory social behaviors, while the bonding property affected only voluntary and continuous participatory behaviors (p<0.05) (Table 3). In the case of Weverse, bridging network attributes affected all participatory behaviors, but bonding network properties had no effect at all (Table 4). Finally, for V-Live all participatory behaviors were positively influenced by bridging network attributes, while most of them expect continuous participation were not affected by bonding network properties (Table 5).

표 1. 네트워크 속성과 참여적 사회 행동
Table 1. Network Attributes & Participation

IV	DV	B	S.E	β	t	p
Bridging	Spontaneous	.72	.05	.67	14.14	.000
Network	Continuous	.60	.05	.58	11.32	.000
Attribute	Online	.53	.05	.54	10.03	.000
	Offline Participation	.69	.05	.63	12.69	.000
Bonding	Spontaneous	.67	.05	.65	13.53	.000
Network	Continuous	.57	.05	.57	10.97	.000
Attribute	Online	.46	.05	.49	8.77	.000
	Offline Participation	.62	.05	.59	11.68	.000

표 2. 가나다라마다사
Table 2. Twitter Attributes & Participation (N=129)

IV	DV	B	S.E	β	t	p
Bridging	Spontaneous	.62	.11	.55	5.77	.000
Bonding	Participation	.17	.10	.16	1.71	.089
Bridging	Continuous	.48	.11	.43	4.19	.000
Bonding	Participation	.25	.11	.24	2.30	.023
Bridging	Online	.46	.10	.50	4.48	.000
Bonding	Participation	.02	.10	.03	.25	.805
Bridging	Offline	.66	.12	.56	5.56	.000
Bonding	Participation	.11	.11	.10	.95	.344

표 3. 유튜브의 네트워크 속성과 참여적 사회 행동
Table 3. Youtube Attributes & Participation (N=102)

IV	DV	B	S.E	β	t	p
Bridging	Spontaneous	.54	.12	.49	4.63	.000
Bonding	Participation	.24	.12	.22	2.08	.040
Bridging	Continuous	.31	.13	.30	2.44	.016
Bonding	Participation	.26	.13	.25	2.08	.040
Bridging	Online	.38	.11	.44	3.50	.001
Bonding	Participation	.03	.11	.04	.31	.759
Bridging	Offline	.49	.14	.44	3.60	.000
Bonding	Participation	.11	.13	.10	.84	.401

표 4. 위버스의 네트워크 속성과 참여적 사회 행동
Table 4. Weverse Attributes & Participation (N=74)

IV	DV	B	S.E	β	t	p
Bridging	Spontaneous	.63	.15	.64	4.30	.000
Bonding	Participation	.10	.16	.10	.64	.525
Bridging	Continuous	.58	.16	.59	3.56	.001
Bonding	Participation	.05	.18	.04	.25	.803
Bridging	Online	.44	.15	.57	2.94	.004
Bonding	Participation	−.19	.17	−.22	−1.15	.256
Bridging	Offline	.72	.18	.65	4.03	.000
Bonding	Participation	−8.108E−5	.20	.00	.00	1.000

표 5. 브이 라이브의 네트워크 속성과 참여적 사회 행동
Table 5. V-Live Attributes & Participation (N=69)

IV	DV	B	S.E	β	t	p
Bridging	Spontaneous	.61	.13	.54	4.68	.000
Bonding	Participation	.24	.13	.21	1.79	.078
Bridging	Continuous	.47	.14	.42	3.40	.001
Bonding	Participation	.28	.14	.25	2.00	.050
Bridging	Online	.48	.13	.49	3.63	.001
Bonding	Participation	.05	.14	.05	.37	.711
Bridging	Offline	.64	.14	.56	4.61	.000
Bonding	Participation	.13	.14	.11	.94	.353

In sum, the bridging nature of the digital media used by ARMY members positively affected social participation. However, we confirmed that the bonding nature of a network did not affect most participating social behaviors except in the case of Twitter use and continuous participation, YouTube use and voluntary and continuous participation, and V-Live use and continuous participation. We confirmed that the open nature of the ARMY community using digital media is closely related to participatory social behavior, but the strong bonds shared by ARMY members within the community do not significantly affect social participation. It was also confirmed specifically that digital media used by ARMY, such as Twitter, YouTube, Weverse, and V-Live, do not differ much in inducing participatory social behavior.

Ⅵ. **Conclusions**

The ARMY digital network is basically open to outsiders. People who like BTS can easily access the community regardless of age, gender, or nationality. The moment anyone who likes BTS identifies themselves as an ARMY member, the ARMY network is likely to welcome them easily. The more the community expands as an entity and the more it aggregates into a larger entity, the greater its influence in society[36]. The openness of the ARMY network exerts social influence through the participation of individual ARMY members, as demonstrated by the integrated methodologies applied in this study.

We confirmed, with the help of mixed methodologies, that the ARMY community uses mainly digital media: Twitter, the most popular network; YouTube, the major repository of content; V-Live, a place to meet BTS in real time; and Weverse, an official platform. The ARMY network's external openness had a greater impact on ARMY members' participation in society than on the connected properties of members. In other words, ARMY's bridging attributes affected voluntary, continuous, online, and offline participatory social behavior, while its bonding attributes mostly failed to induce participatory social behavior.

Since an open network absorbs more members into the community while stimulating communication and connectivity among members, openness is closely related to securing social capital. Social capital is defined by social networks[17]. Individuals in a digital era can transcend time and space and create communities anytime and anywhere with people who have common interests[10]. Finding people who like the same things and have the same taste is facilitated by networking individual interests and tastes around a shared interest[37] [38]. The strategy of utilizing digital networks in the course of practicing the values of the community is strongly influenced by the openness of the network. Such openness has greater impacts on social capital formation and participatory social behavior than on fostering a strong sense of community[13].

While this study clearly identified the relevance between network attributes and participation, the four types of digital media showed no significant difference in the results. It is assumed that the media used by the fan individual for more than two hours a day was all measured as the main digital media, so it failed to compare the differences by media. It is hoped that a comparative study will be conducted according to the type of media through future research.

Our findings are meaningful in that we specifically identified connections between the network attributes of the digital community and participatory social behavior, focusing on the possibility of fandom representing the public. Individual fans feel a stronger sense of community with the fandom than with their local communities[5] because members of the fandom are strongly psychologically connected to each other[39]. The psychological community consciousness of fandom is useful for explaining behavioral commitment to common interests[5].

Fandoms are studied to explore how individuals form communities in the media-mediated world and routinize daily social participation[40]. The openness of the digital community, rather than strong bonds within it, plays an important role in inducing participatory social behavior. Its openness would be a new clue that is useful for determining its role as the public in future studies.

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