

# A Study on the Effects of Cyber Bullying on Cognitive Processing Ability and the Emotional States: Moderating Effect of Social Support of Friends and Parents

Yituo Feng<sup>a</sup>, Sundong Kwon<sup>b,\*</sup>

<sup>a</sup> Ph.D. Student, Department of Management Information Systems, Chungbuk National University, Korea

<sup>b</sup> Professor, Department of Management Information Systems, Chungbuk National University, Korea

---

## ABSTRACT

College students experience more cyber bullying than youth and cyber bullying on college students may be more harmful than youth. But many studies of cyber bullying have been conducted in youth, but little has been studied for college students. Therefore, this study investigated the negative effects of college students' cyber bullying experience on cognitive processing ability and emotional states. The social support of friends has a buffering effect that prevents stress and reduces the influence on external damage in stressful situations. But the impact of parental social support is controversial. Traditionally, the social support of parents has been claimed to mitigate the negative effects of external damage. Recently, however, it has been argued that parental social support, without considering the independence and autonomy needs of college students, does not alleviate the negative effects. Therefore, this study examined how the social support of friends and parents moderate the negative impact of cyber bullying. The results show that the more college students experience cyber bullying, the lower their cognitive processing ability and emotional states. And, the higher the social support of friends, the lower the harmful impacts of cyber bullying on cognitive processing ability and emotional states. But, the higher the social support of parents, the higher the harmful impacts of cyber bullying on cognitive processing ability and emotional states.

*Keywords:* Cyber Bullying, Cognitive Processing Ability, Emotional States, Social Support of Friends, Social Support of Parents

---

## I . Introduction

Social network services have been used as new

school violence tools. School violence in the past was mainly face-to-face physical violence. However, new forms of violence such as cyber bullying have

---

\*Corresponding Author. E-mail: [sdkwon@cbnu.ac.kr](mailto:sdkwon@cbnu.ac.kr)

emerged recently. Cyber bullying is a representative example of the misuse of information and communication technology (Ak et al., 2015; Chisholm and Day, 2013).

According to Korea Communications Commission (2016), 14.6% of elementary school students, 18.5% of middle school students, 18.6% of high school students, and 25.5% of college students in their 20s were victims of cyber bullying. This relatively high ratio of college students' cyber bullying is because they are more connected with acquaintances through Internet social media to perform group assignments and club activities than youth. The relevant literature on cyber bullying has mainly focused on minimizing the harmful effects of youth cyber bullying (Kim, 2014; Lee, 2016; Lee, 2017; Moon, 2016), but the literature on college student cyber bullying is scarce. Cyber bullying on college students may be more harmful than youth because they cause excessive stress and slow intellectual activity (Lee, 2004) but empirical research has yet to be carried out. Therefore, this study examined the effects of college students' cyber bullying on cognitive processing ability and emotional states.

College students are placed in a social support system where they live with support from their parents or friends (Leary et al., 1998). The social support of friends prevents stress and reduces the influence on external damage (Lee, 2005; Park, 1989), if a cyber-bullied student receives social support from a friend, it can reduce the decrease in cognitive processing ability and emotional depression. Therefore, this study examined the moderating role of the social support of friends.

College students have a higher desire for independence and autonomy than youth. If parents send more social support than they need without considering the desire for their independence and

autonomy, it undermines social adjustment and initiative of college students (Manzeske and Stright, 2009; Smith and Goodnow, 1999) and lowers resilience and increases anxiety (Garnezy, 1993; Park, 2001). For college students who are cyber-bullied, it is meaningful to study how the social support of parents is affected. Therefore, this study examined the moderating role of the social support of parents. This study is expected to contribute to reducing the damage of cyber bullying among college students and helping the recovery of cyber-bullied students.

The paper is structured as follows. Section 2 presents a literature review about cyber bullying concept, harmful impacts of cyber bullying. Section 3 represents hypotheses about the effects of cyber bullying on cognitive processing ability and emotional states and moderating effect of social support of friends and parents. Section 4 presents research methods, data analysis results, and discussion. Section 5 presents the research summary, implications, and limitations.

## II. Theoretical Background

### 2.1. Characteristics of Cyber Bullying

Cyber bullying has emerged with the development of information and communication technology and smartphone devices. And the trend of cyber bullying has also diversified (Cho, 2012). Cyber bullying refers to bullying another person through the use of information devices such as a computer or a mobile phone text message, email, digital image transmission, web page, instant message, blog, and chat room (Belsey, 2006; Patch and Hinduja, 2011).

The traditional form of bullying is a violent act that directly and physically harasses and dismisses

another student in an offline school environment. Bullying became a social issue in Canada and the United States in the 1970s. In the 2000s, however, with the development of information and communication technologies such as the Internet, the term cyber bullying began to emerge in Europe, Canada, the United States, Japan, Australia, and many other countries.

Although cyber bullying is different from traditional school violence in that it is committed via online, cyber bullying is similar to traditional school violence in that they are both intentional and repeated acts, malicious behaviours to harm the other party, and the imbalance of power between the victim and the perpetrator (Hinduja and Patchin, 2008).

In traditional offline bullying, one can identify the perpetrator and the victim, and the victim's physical damage is clear. Unlike traditional offline bullying, however, the perpetrator of cyber bullying is usually not afraid of arrest and punishment due to the anonymity of the perpetrator. Besides, the perpetrator enjoys the suffering of his or her victim by considering it as a joke (Chisholm and Day, 2013; Patchin and Hinduja, 2011).

Offline bullying and cyber bullying differ in terms of dominance, control, and power imbalance between perpetrators and victims (Hinduja and Patchin, 2006).

In offline bullying, aggressive behaviour occurs when aggressors are usually older and physically stronger than the victim. By contrast, in online space, the level of bullying differs depending on the ability to use electronic devices such as computers and mobile phones (Cho, 2012).

Internet and smartphone addiction can lead to cyber bullying by causing aggression such as swearing and violence in cyberspace and causing attention deficit, hyperactivity, and anger control disorder (Cho, 2012). Factors affecting cyber bullying are shown in <Table 1> below.

## 2.2. Harmful Impacts of Cyber Bullying

The essence of man lies in the soul consisted of cognition, affection, and conation. When these three elements are performed in harmony and optimal condition, justice is realized and happy life becomes possible (Kant, 1790). Cyber bullying degrades logical thinking (Mishna et al., 2012) and causes negative emotional states. If this condition continues, it will not maintain a normal life with others and lead to social maladjustment, depression, suicidal impulse (Bauman et al., 2013; Choon, 2015), and even actual suicide (Kim, 2013; Mishna, 2012; Robert, 2008). Therefore, it is meaningful to study cognition and

<Table 1> Cyber Bullying Influencers

	Factors Affecting Cyber Bullying	Source
Individual	Internet addiction and smartphone addiction (negative effect)	Cho, 2012; Kim, 2015
	Life dissatisfaction, low self-esteem, Low self-control (negative effect)	Lee, 2005; Logue, 1995
Home	Parental Stress (negative effect)	Hong and Nam, 2000; Kwon and Moon, 2007
	Parenting attitudes and discipline methods, attachment and bond with a child (positive effect)	Hong, 2007
Social	School violence damage and harassment experience (negative effect)	Beattie, 2005
	Collectivism, Interdependence (negative effect)	Lee and Na, 2015

affection as important antecedents of conation and consequences. This study focuses on the harmful effects of cyber bullying. Cyber bullying can affect three areas such as cognition, affection, and conation. However, we focused on cognitive and emotional issues, which are directly influenced by cyber bullying and are relatively easy to measure.

### 2.2.1. Cognitive Processing Ability

Cognition is the intellectual or thought process such as consciousness, intelligence, thinking, problem-solving, imagination, creativity, reasoning, planning, and strategy formulation (Flavell et al., 2002). Cognitive processing ability refers to the ability of a student to solve and deal with problems through the process of understanding and thinking about acquired knowledge (Kim, 2016). Cyber bullying can weaken an individual's ability to understand, think, and concentrate. This study focused on the cognitive processing ability of college students that may be adversely affected by cyber bullying. We defined cognitive processing ability as problem-solving ability and managing the problem through the process of understanding and logical thinking of the knowledge acquired by college students in the school environment.

### 2.2.2. Emotional States

Emotion is often used in a similar way to feelings, moods, and mind, and is used as a superimposition that encompasses feelings, moods, and mind (Robbins et al., 2013). Emotion is classified into emotional characteristics and emotional states. Emotional characteristics are a personality trait of individuals and are relatively stable in many situations (Cropanzano et al., 1993). Emotional states, on the

other hand, are variable characteristics that depend on various socio-organizational contexts (Judge et al., 2009). For example, "I am a person who feels fear easily" corresponds to emotional characteristics, and "I am trembling now with fear" corresponds to an emotional state. These emotional states are divided into positive and negative. Positive emotional states are depicted as joy, enthusiasm, happiness, and euphoria (Watson et al., 1988). Negative emotional states refer to unpleasant ones, such as fear, depression, and guilty feeling. In this study, we focused on the psychological changes of college students caused by cyber bullying.

### 2.3. Social Support

People are placed in a social support system from parents, friends, and others (Leary et al., 1998). The social support can be emotional, informational, instrumental, and appraisal support provided by friends, parents, and others (Cohen and Hoberman, 1993; Kim, 1994). Social support is interpersonal communication that includes emotional attention, information providing, instrumental assistance, and praise (House, 1981). People can receive various forms of social support from their parents, family, friends, neighbors, and others (Park, 1985).

In the past, researchers approached social support from a positive point of view. Individuals with a high level of support experience a sense of competence and achievement in their jobs with low psychological exhaustion (Brown and O'Brien, 1988). Besides, social support improves an individual's psychological adaptation and problem-solving ability and relieves stress (Cohen and Hoberman, 1983; Kim, 1994).

But, recently some researchers approached social support from a negative point of view (Kim, 1994;

Kim, 2019). Parental social support for college students may deteriorate their autonomy and independence and reduce problem-solving ability (Kim, 1996). Without considering the independence and autonomy of grown-up college students, if parents continue to show the social support that parents had shown to their children in their childhood to their grown-up college students, the relationship between parents and children worsens and the development of their children is hampered (Manzeske and Stright, 2009).

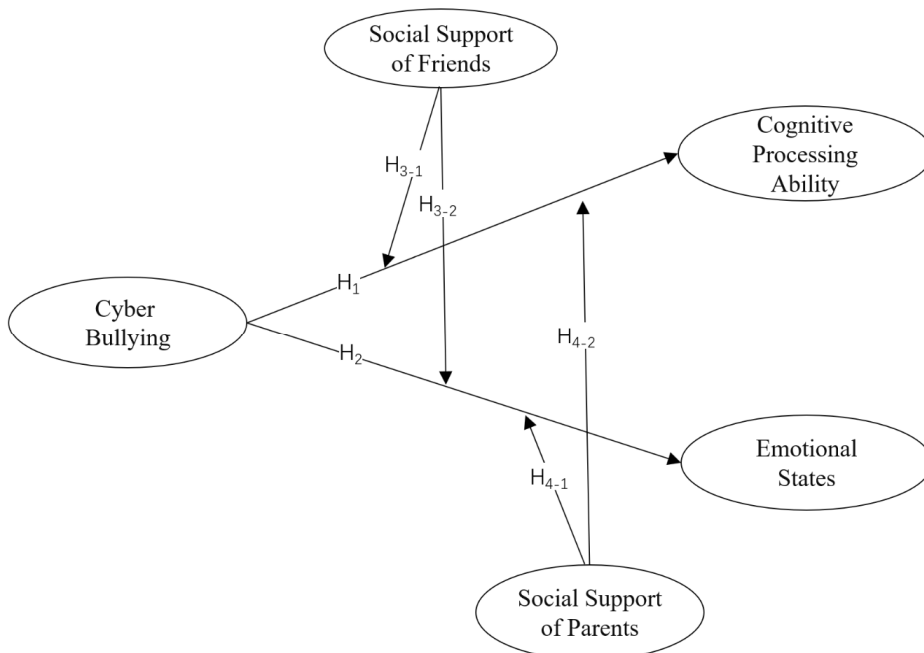
### III. Research Model and Hypothesis

#### 3.1. Research Model

College students may experience more cyber bullying damages than teenagers and the negative impact

of these damages may be greater to college students than to adolescents. Therefore, college students' experiences of cyber bullying were selected as independent variables. Previous studies indicate that cyber bullying for elementary school and middle school students is likely to lead to decreased logical thinking ability (Mishna et al., 2012) and negative emotional states, and then may lead to suicide if repeated (Kim, 2013; Mishna, 2012; Robert, 2008). However, there are not many studies on the negative effect of cyber bullying on college students. Therefore, this study investigated the negative effects of college students' cyber bullying experience on cognitive ability and emotional states.

Cyber bullying can be mitigated through the social support of friends and parents. First, the social support of friends has a buffering effect that it reduces external adverse effects such as stress (Cameron et al., 2003; Koh and Moon, 2015; Lee, 2005; Park, 1989). However, the impact of parental social support



<Figure 1> Research Model

is controversial. Traditionally, parental social support has been claimed to relieve the negative effects of external harm (Kim, 1994). Recently, however, it has been argued that parental social support does not relieve the negative effects (Kim, 2019). In particular, parental social support may deteriorate autonomy and independence and reduce the problem-solving ability for college students (Kim, 1996). Therefore, this study examined how the social support of friends and parents moderate the negative impact of cyber bullying. The research model of this study is shown in <Figure 1>.

### 3.2. Research Hypothesis

#### 3.2.1. Relationship between Cyber Bullying and Cognitive Processing Ability

The experience of cyber bullying is likely to have a harmful impact on cognitive processing ability. In this study, the experience of cyber bullying refers to the degree of experiencing discomfort or anger by language, image, and video in the online space through SNS such as KakaoTalk. Cognitive processing ability refers to the ability of college students to logically understand information gained in their everyday school environment and to solve and deal with the problem.

Existing researchers suggested that cyber bullying has a negative effect on students' understanding, logical thinking, and analytical ability when it is repeated without the constraint of time and space. For example, Mishna et al. (2012) found that students who had been subjected to cyber bullying are likely to experience the same problems as those who suffered from other traditional school violence, such as loss of concentration, poor comprehension ability, and low self-esteem. According to the study by the Korea

Communications Commission in 2016, college students showed that they do not want to do anything or learn at schools after experiencing cyber bullying. Offline bullying, or mobbing, causes extreme stress, which can reduce a student's concentration and performance, and cause schizophrenic behavior (Hong and Nam, 2007). Sustained extreme stress degrades cognitive processing. In particular, it weakens attention (Hockey, 1979), reduces concentration and memory, and causes post-traumatic stress disorder (Wolfe and Charmey, 1991). Considering these prior studies, it is expected that the more students experience cyber bullying damage, the lower the ability to logically think and analyze is. Based on the above discussion, we established the following research hypothesis.

*H1: Cyber bullying experience will have a negative impact on cognitive processing ability.*

#### 3.2.2. Relationship between Cyber Bullying and Emotional States

The experience of cyber bullying will have a negative impact on the emotional states. In this study, emotional states refer to the change of emotion, feeling, and mind to the negative states caused by specific events such as cyber bullying. According to previous studies, students with cyber bullying experience displayed a rapid and direct change in emotions and feelings than those who did not. Robert (2008) found that cyber bullying makes victims difficult to control emotions and leads to negative consequences such as depression, sadness, and fear. Mishna (2012) also reported that cyber bullying is related to depression, suicidal ideation, and low self-esteem. Jeon (2013) found that cyber bullying leads to a victim's depression and aggression. Kim (2013) reported that stu-

dents who experienced repeated cyber bullying have difficulty in controlling their emotions, so the suicidal ideation increases and the occurrences of actual suicide increase too. According to the study by the Korea Communications Commission (2016), negative emotions such as “depression, anxiety or severe stress,” “difficult to meet people” and “suicidal impulse” were reported for the victims of cyber bullying. The hypothesis that cyber bullying experience adversely affects the emotional states is set as follows.

*H2: Cyber bullying experience will have a harmful effect on emotional states.*

### 3.2.3. Moderating Effect of Friends' Social Support

The social support of friends includes emotional, informational, instrumental, and appraisal support that college students can receive from their friends. The social support of friends is an important factor in the growth and development. Social interactions with friends are characterized by equality, unlike hierarchical interactions with parents. Through the social support of friends, college students acquire skills to logically analyze concepts and social institutions (Berndt, 1982). And the social support of friends helps to solve problems and acquire social skills (Bukowski, 1989). The social support of friends has a buffering effect that prevents stress and reduces the influence on external damage. Thus, if a cyber-bullied student receives social support from a friend, it can help college students exercise the problem-solving ability so that they can cope well to the negative effects of psychological and social burdens such as stress (Cameron et al., 2003; Ko and Moon, 2015; Lee, 2005; Park, 1989). The following research hypothesis was derived reflecting previous research.

*H3-1: The higher the social support of friends, the less harmful impact of cyber bullying experience on cognitive processing ability.*

The social support of friends has a buffering effect that lowers emotional exhaustion (Cameron et al., 2003). In low-stress situations, there is no difference in the level of adaptation between high and low social supports, but in high-stress situations, social support buffers against the harmful effects of stress (Wheaton, 1985). If social support is provided when there is a shortage of resources, it helps to relieve stress by supplementing the scarce resources of the individual. Friend's social support solves psychological problems by sharing understandings and talking about feelings and secrets to friends (Damon, 1977) and helps with emotion control and self-discovery (Parker and Asher, 1993). Thus, the students who experience cyber bullying receive social support from their friends are less likely to suffer depression and more likely to have a sense of security. Therefore, they maintain good psychological and mental health, which can help quick adaptation and recovery. Therefore, the following hypothesis was set in this study.

*H3-2: The higher the social support of friends, the less the negative impacts of the cyber bullying experience on emotional states.*

### 3.2.4. Moderating Effects of Parental Social Support

Until now, research on the role of parents in grown-up children has been carried out with parental support (Catherine et al., 2013; Cohen and Hoberman, 1983; Cutrona et al., 1994), parental psychological control (Barber, 1996; Brian et al., 2005; Maria et al., 2015), and intense parental support such as heli-

copter parents (Berkman et al., 2000; Karen et al., 2012; Uchino, 2009). This study focused on parental support among them. Parental social support refers to emotional, informational, instrumental, and appraisal support that college students may receive from their parents. Parental support for a child may depend on the authenticity and desire. According to previous studies, parental social support for children is classified into positive and negative (Kim, 1994; Kim, 2019). The social support of parents contributes to the reduction of external negative influences such as stress. However, recent research suggests that the lower the social support of parents, the better for their children is (Kim, 2019). This study on cyber bullying for college students approached from the latter point of view for the following reasons.

Young adults have a higher desire for independence and autonomy than childhood or adolescence. College students seek independence in relationship with their parents, but their independence is limited because of a marginal one of their social status (Berndt, 1982). According to studies of parental support in early adulthood, when grown-up children view the support that they receive from parents as appropriate (Uchino, 2009), and when they need the support (Desjardins and Leadbeater, 2017), parental support for grown-up children can be beneficial. However, providing parental support shown in childhood without considering the independence and autonomy needs of grown-up college students worsens parent-child relationships and contributes negatively to the development of their children (Manzeske and Stright, 2009). When a grown-up child with parental support is not considered appropriate for his or her peers, parental support lowers the child's efficacy and initiative (Smith and Goodnow, 1999). Parental support for grown-up children can undermine their social adjustment and cause

social, financial, and emotional problems (Aquilino, 2006; Fingerma et al., 2009; Pillemer and Sutor, 1991). Greater parental emotional support is associated with poorer young adult adjustment (Desjardins and Leadbeater, 2017). Specifically, young adults with high levels of emotional support from mothers have lower occupational status and lower-income.

Parents in Korea tend to see the sacrifice for their children as the virtue of Confucian culture (Jung, 2008). The Korean culture of devoted child-rearing remains a dominant family culture even though the social and economic system has changed due to rapid industrialization (Bang, 2000; Jang, 2007). If a college student is psychologically independent of his or her parents, they can develop the ability to adapt to a harsh social environment (Josselson, 1988). If college students are free from the social support of their parents and solve problems by themselves, they will be able to solve their problems with logical manner and concentration, while preventing the degradation of cognitive processing power caused by cyberbullying. Therefore, the following research hypothesis was derived.

*H4-1: The lower the social support of parents, the less the negative impact of cyber bullying experience on cognitive processing ability.*

If college students receive more social support from their parents than necessary, their self-esteem decreases and anxiety increases, which may be negative for psychological health (Han, 2016). Conversely, if the parents solve the problem of college students or make decisions for their college students, resilience and self-identity can be lowered and the anxiety of their children in colleges can be increased (Garmezy, 1993; Park, 2001). Similarly, a college stu-



dent who experiences low social support of parents could maintain his or her emotional states so that his or her emotional damage from cyber bullying does not lead to negative states such as anxiety or fear. Therefore, the following research hypothesis

was derived from this study.

*H4-2: The lower the social support of parents, the less the negative impacts of cyber bullying experience on emotional states.*

<Table 2> Questionnaire Items and Sources

Constructs		Survey Items	Sources
Cyber bullying experience		I have seen writing that upsets me.	Hinduja and Patchin (2012)
		I had been angry or uncomfortable by seeing posting.	
		I have received a message to upset me.	
		I have seen information about me that I did not want to share with others.	
		Someone abused or harassed me.	
		I was insulted or threatened by someone.	
		My reputation was damaged due to bad rumors about me.	
Emotional states		I am afraid of learning something new. (reverse)	Lee (1997)
		I cannot do anything because I become nervous when I have a big problem. (reverse)	
		I tend to hesitate to initiate talk with friends. (reverse)	
Cognition process-ability		I became less understanding of what my professor teaches. (reverse)	Kim (2004)
		I cannot complete an assignment on time. (reverse)	
		I have lowered my ability to logically think and analyze. (reverse)	
		I could not concentrate on learning. (reverse)	
		I rather have widened interest and understanding of things and social phenomena.	
	I have become increasingly difficult to gain new knowledge and skills needed for adapting social change. (reverse)		
Social Support	Emotional	He or she always keeps an interest in my problem.	Park (1985)
		I have a person whom I can trust and depend on.	
		When I feel bad, he or she tries to understand my feelings and to change my mood.	
	Informational	He or she gives me information that can help me to find out the cause of the problem when something happens to me.	
		I am given help to overcome my hardships.	
		He or she advises to understand reality and to adjust well to society.	
	Instrumental	He or she is willing to give me money when I need it.	
		He or she always does his or her best to help me under any circumstances.	
		When I have a problem, he or she is willing to take time and talk to me.	
	Appraisal	When I complete work, he or she fairly evaluates whether it is done well or not.	
He or she respects my opinion and accepts it as a substitute.			
He or she acknowledges my work so that I can be proud of what I have done.			

## IV. Research Method

### 4.1. Measures

<Table 2> shows the measurement items of each construct derived from previous studies. To ensure the reliability and validity of the questionnaire in this study, several pilot tests were conducted before distributing the questionnaire. The questionnaire consisted of a five-point Likert scale ranging from strongly disagree (1) to strongly agree (5). The questions about emotional states and cognition process ability were asked negatively, except one question. But in the research model analysis, reverse coding was used. We surveyed college students about their experience of cyber bullying in the last six months.

### 4.2. Sample Profiles

Of 237 responses, 216 were used for the final analysis except for 21 incomplete responses. The demographic characteristics of respondents are shown in <Table 3>. Among the 216 respondents, 43% were male and 57% were female. According to the Korea Communications Commission survey in 2016, 25.5% of college students in their 20s have been subjected

to cyber bullying. In the data analysis of this study, 55 of the 216 have experienced cyber bullying from “not so serious” to the “very serious” level of cyber bullying. Therefore, 25.5% of college students have experienced cyber bullying, which is the same level as the information from the Korea Communications Commission.

### 4.3. Analytical Tools

We used the IBM SPSS Statistics 22 statistical program for factor analysis and the difference in path coefficients between groups of moderating variables. We used Smart PLS 2.0 statistical program to examine the hypothesis of the measurement model, structural equation model, and variables. To analyze the moderating effect of social support, data samples were divided into high and low groups based on the mean value. Then, the path coefficients were tested and differences in the path coefficient were analysed.

### 4.4. Data Analysis and Results

#### 4.4.1. Measurement Model

We analysed measurement items and constructs

<Table 3> Demographic Characteristics of Respondents

Variables	Attributes	No. of respondents	Percentage
Sex	Male	93	43%
	Female	123	57%
Grade	1st year	37	17%
	2nd year	45	21%
	3rd year	71	33%
	4th year	63	29%
Time of Internet use per day	Less than 1 hour	3	1%
	Less than 2 hours	33	15%
	Less than 3 hours	65	31%
	Less than 4 hours	52	24%
	More than 4 hours	63	29%

using Smart-PLS 2.0 program and PLS bootstrapping. As <Table 4> shows, Cronbach's Alpha values of each construct are 0.7 or higher, indicating that each construct is reliable. The composite reliability (CR) of each construct was 0.7 or higher, and the mean-var-

iance extracted values (AVE) were 0.5 or higher, indicating convergent validity (Fornell and Larcker, 1981).

The discriminant validity was tested through checking whether the square root of the AVE dis-

<Table 4> Reliability and Validity

Scale Items	Factor Loading	AVE	Composite Reliability	Cronbach's Alpha
Cyber bullying1	0.806	0.645	0.936	0.922
Cyber bullying2	0.891			
Cyber bullying3	0.812			
Cyber bullying4	0.734			
Cyber bullying5	0.725			
Cyber bullying6	0.832			
Cyber bullying7	0.827			
Cyber bullying8	0.787			
Emotion1	0.644	0.566	0.795	0.724
Emotion2	0.839			
Emotion3	0.762			
Cognition1	0.762	0.575	0.871	0.815
Cognition2	0.747			
Cognition3	0.831			
Cognition4	0.711			
Cognition5	0.737			
Parent support1	0.794	0.641	0.947	0.938
Parent support2	0.832			
Parent support3	0.806			
Parent support4	0.740			
Parent support5	0.813			
Parent support6	0.838			
Parent support7	0.843			
Parent support8	0.727			
Parent support9	0.783			
Friend support1	0.743	0.591	0.935	0.924
Friend support2	0.785			
Friend support3	0.758			
Friend support4	0.764			
Friend support5	0.776			
Friend support6	0.719			
Friend support7	0.776			
Friend support8	0.856			
Friend support9	0.750			

played on the diagonal axis of the correlation coefficient matrix within a construct is larger than the correlation between different constructs. As shown in <Table 5>, the smallest value (0.752) of the square root of AVE for within a construct is higher than the largest correlation coefficient (0.535) with other constructs, and it is confirmed that the discrimination validity is acceptable.

#### 4.4.2. Structural Model

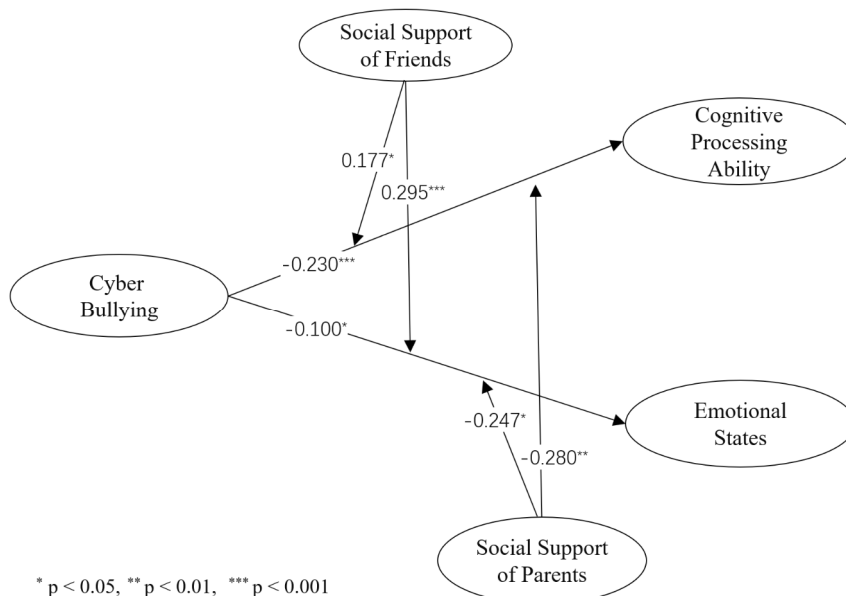
The path coefficient provides information on cau-

sality between two variables (Wixom and Warson, 2001). <Table 6> shows the results of the significance using the standardized path coefficients ( $\beta$  values) and the t-values of the path coefficients. The smallest t-value was found to be 6.588 (cyber bullying experience  $\rightarrow$  cognitive processing ability) and the largest t-value was 7.418 (cyber bullying experience  $\rightarrow$  emotional states). Therefore, H1 and H2 were supported at a 0.01 significance level and H3-1, H3-2, H4-1, and H4-2 about moderating effect were also supported at a 0.05 significance level.

<Table 5> Discriminant Validity

Constructs	1	2	3	4	5
1. Emotional states	0.752				
2. Cyber bullying	-0.261**	0.803			
3. Parental support	0.240**	-0.119*	0.800		
4. Friend support	0.376**	-0.148*	0.523**	0.769	
5. Cognition process ability	0.535**	-0.322**	0.262**	0.341**	0.759

Note: \* $p < 0.05$ , \*\* $p < 0.01$



<Figure 2> Research Model Analysis Results

&lt;Table 6&gt; Standardized Structural Estimates and Hypotheses Tests

Hypothesis	Basic Model		Moderating Effect Model		Results
	Path Coefficient	T-value	Path Coefficient	T-value	
H1. Cyber bullying → cognition ability	-0.323	5.570***	-0.230	3.988***	supported
H2. Cyber bullying → Emotional states	-0.256	4.055***	-0.100	2.198*	supported
H3-1. Cyber bullying → cognition ability ↑ Friend support			0.177	2.236*	supported
H3-2. Cyber bullying → Emotional states ↑ Friend support			0.295	3.414***	supported
H4-1. Cyber bullying → cognition ability ↑ Parental support			-0.247	2.141*	supported
H4-2. Cyber bullying → Emotional states ↑ Parental support			-0.280	3.079**	supported

Note: \* $p < 0.05$ , \*\* $p < 0.01$ , \*\*\* $p < 0.001$

## 4.5. Discussions

### 4.5.1. Negative Impact of Cyber Bullying Experience

25.5% of undergraduate students have experienced cyber bullying from “not so serious” to a “very serious” level. Such finding is consistent with previous research that college students experience more harm from cyber bullying than teenagers (Korea Communications Commission, 2016). The negative effects of cyber bullying of college students were categorized into cognitive and emotional aspects. The finding suggests that the more cyber bullying students experience, the lower their cognitive processing ability, such as comprehension, thinking ability, and problem-solving ability. This is a serious personal and social problem because cyber bullying makes

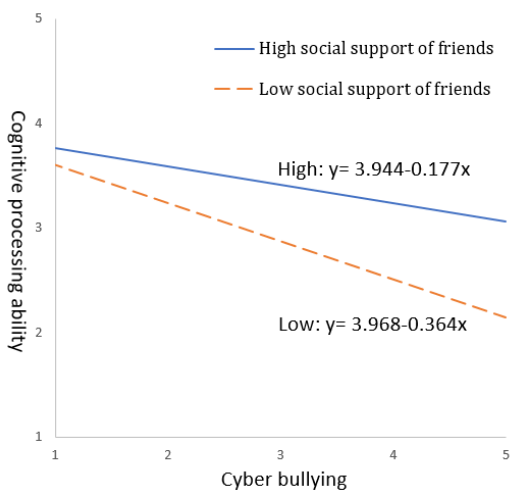
it difficult to adapt to the changing environment and to acquire new knowledge and skills necessary for social advancement. And college students are subjected to negative emotional states such as depression, anxiety, and fear as they experience cyber bullying. Lee (2004) argued that cyber bullying leads to excessive stress and slowed intellectual activity for college students, which is more serious than teenagers. Given the serious degradation of cognitive processing ability and emotional states, research attention focused on teenagers should be given to college students.

### 4.5.2. Moderating Effects of Social Support

It was found that the higher the social support of friends, the less the harmful effects of cyber bullying on cognitive processing ability and emotional states.

Conversely, the lower the social support of the parents, the less the negative influence on their children in colleges. Smart-PLS shows only standardized beta values. To clearly identify the moderating effects of social support, the unstandardized latent variable scores were calculated by the Smart-PLS and then the unstandardized regression coefficients were derived by regression analysis of the SPSS statistical tool (Sarstedt et al., 2010). The moderating effects of social support were shown in <Figure 3> to <Figure 6>.

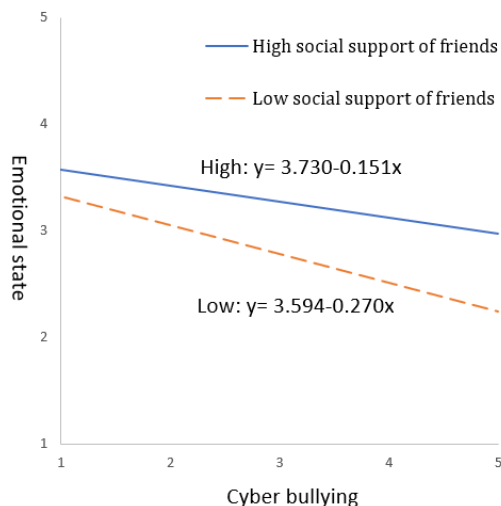
(1) The moderating effect of friend's social support on cognitive processing ability



<Figure 3> Moderating Effect of Friend's Social Support on Cognitive Processing Ability

The higher the social support of friends, the lesser the harmful impact of cyber bullying on cognitive processing ability. This result means that when someone experiences cyber bullying under the high social support of friends, the ability to logically think and analyze is less likely to decrease by cyber bullying.

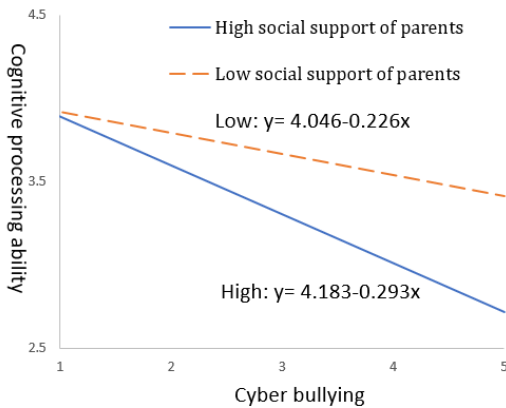
(2) The moderating effect of friend's social support on emotional states



<Figure 4> Moderating Effect of Friend's Social Support on Emotional States

The higher the social support of friends, the lesser the harmful impact of cyber bullying on emotional states. This means that when someone experiences cyber bullying under the high social support of friends, emotional states is less likely to changes negatively. Recently, due to the rise of Korean loner culture, Korean college students enjoy being alone while eating alone, drinking alone, and meddling alone, which is referred to as "honjok," a neologism combining "hon" (alone) and "jok" (tribe). The rise of loner culture makes college students vulnerable to the negative impact such as cyber bullying. To keep the emotional health, it is necessary for college students to participate in social activities and to understand the importance of social support of friends.

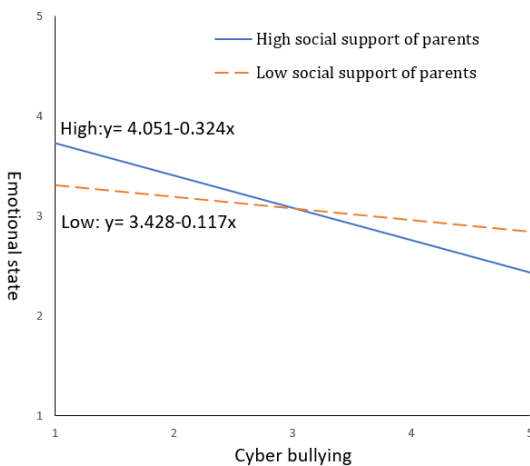
(3) The moderating effects of parental social support on cognitive processing ability



<Figure 5> Moderating Effect of Parental Social Support on Cognitive Processing Ability

The lower the social support of parents, the lesser the harmful impact of cyber bullying on cognitive processing ability. This result means that when someone experiences cyber bullying under the low social support of parents, the ability to logically think and analyze is less likely to decrease by cyber bullying.

(4) The moderating effect of parental social support on emotional states



<Figure 6> Moderating Effect of Parental Social Support on Emotional States

The lower the social support of parents, the less the harmful impact of cyber bullying on emotional states. This means that when someone experiences cyber bullying under the low social support of parents, emotional states is less likely to changes negatively. Thus, if parents show high social support for college students who need independence and autonomy, they need to consider it again to help their children’s social adaption.

## V. Conclusions

### 5.1. Summary

This study examined the negative effects of college students’ cyber bullying on cognitive processing ability and emotional states. And we studied how social support of friends and parents moderates the negative effects of cyber bullying. The results of this study are as follows. Firstly, the more cyber bullying college students experience, the lower their cognitive process-ability such as comprehension, thinking, and problem-solving ability is. Secondly, when college students experience cyber bullying, they are subjected to negative emotional states such as depression, anxiety, and fear. Thirdly, the higher the social support of friends is, the lesser the harmful effects of cyber bullying on cognitive processing ability and emotional states are. Fourthly, the lower the social support of parents is, the lesser the harmful effects of cyber bullying on cognitive ability and emotional states is.

The cyber bullying experience of college students deteriorates the cognitive processing ability, makes it difficult to acquire the knowledge and skills required for environmental adaptation and social advancement, undermines the healthy emotional states,

reduces self-confidence, and causes fear and anxiety. Given the severity of cyber bullying damages, efforts should be made to prevent damages from cyber bullying and to resolve the problem.

High social support of friends prevents the fall of cognitive processing ability and the negative change of emotional states by cyber bullying. Therefore, it is still important to build friendships with other students and to secure social interpersonal skills in the modern time of isolation. But high social support of parents exacerbates the negative effects of cyber bullying on cognitive processing ability and emotional states. Thus, if parents of a college student show high social support to him they need to rethink about it considering his needs of independence and autonomy.

## 5.2. Implications and Limitations

From an academic point of view, this study is meaningful in that it has expanded the research target of cyber bullying from elementary and middle school students on which prior research has largely focused to college students. This study also is meaningful in that it has identified the harmful effects of cyber bullying for college students and drew an academic

understanding that efforts are needed to prevent cyber bullying and recover from it.

From the viewpoint of practical problem solving, this study is meaningful in that it shows that social support of friends decreases cyber bullying damage. And this study demonstrates that the lower the parental social support for cyber-bullied college students is, the lower the negative effects of cyber bullying is. Thus, it is necessary to rethink the traditional perception that the higher the social support of parents, the better.

This research has a limitation that it did not adequately provide previous research on whether social support of parents and friends has the conflicting moderating effects, especially due to lack of prior research on the adverse effects of excessive parental social support. And this study did not specify how high the social support of parents causes negative effects and what low parents' social support is appropriate. Thus we suggest further research on the appropriate and excessive levels of parental support. This study also has a limitation of developing survey questionnaires of cyber bullying that one sentence contains two concepts such as 'angry or uncomfortable'. Due to these limitations, care must be taken in interpreting the results.

## <References>

- [1] Ak, S., Ozdemir, Y., and Kuzucu, Y. (2015). Cyber victimization and cyberbullying: The mediating role of anger, don't anger me. *Computers in Human Behavior*, 49, 437-443.
- [2] Aquilino, W. S. (2006). Family relationships and support systems in emerging adulthood. In J. J. Arnet and J. L. Tanner (Eds.), *Emerging adults in America: Coming of age in the 21st century*. Washington, DC: American Psychological Association. 193-217.
- [3] Bang, H. J. (2000). A study on the characteristics of the relationship between parents and children in Korean society. *Journal of the Korean Psychological Society: Social Affairs*, 6(3), 41-65.
- [4] Barber, B. K. (1996). Parental psychological control: Revisiting a neglected construct. *Child Development*, 67(6), 3296-3319.
- [5] Bauman, S., Toomey, R. B., and Walker, J. L. (2013). Associations among bullying, cyberbullying, and suicide in high school students. *Journal of Adolescence*, 36(2), 341-350.
- [6] Beattie, G. S. (2005). *Social Causes of Depression*. Retrieved April, 6, 2006.



- [7] Belsey, B. (2006). *Cyberbullying: An emerging threat to the "always on" generation*. Retrieved from <http://www.cyberbullying.ca>.
- [8] Berkman, L. F., Glass, T., Brissette I., and Seeman, T. E. (2000). From social integration to health: Durkheim in the new millennium. *Social Science and Medicine*, 51, 843-857.
- [9] Berndt, T. J. (1982). The features and effects of friendships in early adolescence. *Child Development*, 53, 1447-1460.
- [10] Brian, K., Barber., Heidi, E., Stolz, Joseph, A., and Olsen, W. (2005). Parental support, psychological control, and behavioral control: assessing relevance across time, culture, and method. *Monographs of the Society for Research in Child Development*, 70(4), i+v+vii+1-147.
- [11] Brown, C., and O'Brien, K. M. (1998). Understanding stress and burnout in shelter workers. *Professional Psychology Research and Practice*, 29, 383-385.
- [12] Bukowski, W. M., and Hoza, B. (1989). Popularity and friendship: Issues in theory, measurement, and outcome. In T. J. Berndt & G. W. Ladd (Eds.), *Wiley series on personality processes. Peer relationships in child development* (pp. 15-45). John Wiley & Sons.
- [13] Cameron, K. S. (2003). Organizational virtuousness and performance, In Kim S. Cameron, Jane E. Dutton, and Robert E. Quinn(eds.) *Positive Organizational Scholarship: Foundations of a New Discipline*, San Francisco: Berrett-Koehler, 48-65.
- [14] Catherine, F., Karine, S., and Frederic, G. (2013). University students' subjective well-being: The role of autonomy support from parents, friends, and the romantic partner. *Journal of Happiness Studies*, 14(3), 893-910.
- [15] Chisholm, J. F., and Day, S. K. (2013). Current status and countermeasures of cyber bullying. *Journal of Social Distress and the Homeless*, 22(1), 35-57.
- [16] Cho, H. J. (2012). Current status and countermeasures of cyberbullying among youths. *National Assembly Research Service*, 16(2), 16-65.
- [17] Choon, B. C. (2015). A study on the relationship between the cyber bullying damage experience and suicide thought of adolescents-focused on the mediating effect of depression. *Youth Welfare Research*, 17(4), 71-92.
- [18] Cohen S. (2004). Social relationships and health. *American Psychologist*, 59, 676-684.
- [19] Cohen, S., and Hoberman, H. M. (1983). Positive event and social supports as buffers of life stress change. *Journal of Applied Social Psychology*, 13, 99-125.
- [20] Cropanzano, R., James, K., and Konovsky, M. A. (1993). Dispositional affectivity as a predictor of work attitudes and job performance. *Journal of Organizational Behavior*, 14(6), 595-606.
- [21] Cutrona, C. E., Cole, V., Colangelo, N., Assouline, S. G., and Russell, D. W. (1994). Perceived parental social support and academic achievement: An attachment theory perspective. *Journal of Personality and Social Psychology*, 66(2), 369-378.
- [22] Damasio, A. R. (2000), "A Second Chance for Emotion," in: Lane, R. D., ed., *Cognitive Neuroscience of Emotion*, Oxford, 12-23.
- [23] Damon, W. (1977). *The social world of the child*. San Francisco : Jossey-Bass.
- [24] Desjardins, T., and Lead, B. J. (2017). Changes in parental emotional support and psychological control in early adulthood: Direct and indirect associations with educational and occupational adjustment. *Emerging Adulthood*, 5(3), 177-190.
- [25] Fingerman, K. L., Cheng, Y. P., Wesselmann, E. D., Zarit, S., Furstenberg, F., and Birditt, K. S. (2012). Helicopter parents and landing pad kids: Intense parental support of grown children. *Journal of Marriage and Family*, 74(4), 880-896.
- [26] Fingerman, K. L., Miler, L., Birditt, K., and Zarit, S. (2009). Giving to the good and the needy: Parental support of grown children. *Journal of Marriage and Family*, 71(5), 1220-1233.
- [27] Flavell, J. H., Miller, P. H., and Miller, S. A. (2002). *Cognitive development* (4th ed.). Upper Saddle River, NJ: Prentice Hall.
- [28] Fornell, C., and Larcker, D. F. (1981). Evaluating

- structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
- [29] Garnezy, N. (1993). Children in poverty: Resilience despite risk. *Psychiatry*, 56(1), 127-136.
- [30] Gugliandolo, M. C., Costa, S., Cuzzocrea, F., and Larcan, R. (2015). Trait emotional intelligence as mediator between psychological control and behaviour problems. *Journal of Child and Family Studies*, 24(8), 2290-2300.
- [31] Han, C. Y. (2016). *The effect of parental overprotective parenting behavior, psychological control and self-identity on the depression of adult entry-level women* (Masters dissertation). Ewha Womans University, South Korea.
- [32] Hinduja, S., and Patchin, J. W. (2006). Off-line consequence of online victimization: School violence and delinquency. *Journal of School Violence*, 6(3), 89-112.
- [33] Hinduja, S., and Patchin, J. W. (2008). Cyber bullying: An exploratory analysis of factors related to offending and victimization. *Deviant Behavior*, 29(2), 1-29.
- [34] Hockey, R. (1979) Stress and the cognitive components of skilled performance. In V. Hamilton and D. Warburton (Eds.), *Human Stress and Cognition*, 141-177. New York: Wiley.
- [35] Hong, B., and Nam, M. (2007). *Youth welfare theory*. Yangseowon.
- [36] House, J. S. (1981). *Work stress and social support*. Massachusetts, Addison-Wesley Publishing Co.
- [37] Jang, S. S. (2007). An all-inclusive view of familism and real-life counseling. *Journal of the Korean Psychological Society: Consultation and Psychotherapy*, 19(3), 523-537.
- [38] Judge, T. A., Woolf, E. F., and Hurst, C. (2009). Is emotional labor more difficult for some than for others? A multilevel experience sampling study. *Personnel Psychology*, 62(1), 57-88.
- [39] Jung, E. Y., and Jang, S.S. (2008). Development of overprotective measures for the perception of the child exploratory factor analysis and verification factor analysis results. *Journal of the Korean Psychological Society: Consultation and Psychotherapy*, 20(2), 293-312.
- [40] Kant, I. (1790). *The critique of judgment*. Trans. J. H. Bernard. Amherst, NY: Prometheus Books.
- [41] Karl, P., and Jill, S. (1991). "Will I ever escape my child's problems?" Effects of adult children's problems on elderly parents. *Journal of Marriage and Family*, 53(3), 585-594.
- [42] Kim, A. R. (2004). A study on the learning and perception of adult learners at the university lifelong education center. *Lifelong Education Studies*, 10(2), 129-165.
- [43] Kim, B. S. (2013). A study on Facebook user's affective effect pertaining to Facebook use: Focusing on subjective happiness. *Journal of Social Science*, 41(1), 85-109.
- [44] Kim, H. J. (2019). *The effect of parental overprotection on adolescents' resilience mediating effect of eco-identity and anxiety*. Doctoral thesis. Seoul: Ewha Women's University.
- [45] Kim, J. A. (1994). *A study on ego defense mechanism and anxiety in relation to social support and self-perception*. Master thesis. Seoul: Ewha Women's University.
- [46] Kim, J. N. (2016). *A study on the relationships among theory of mind, language ability and cognitive processing ability for young children*. Master Thesis. Seoul: Chung-Ang University.
- [47] Kim, M. J. (2014). Influence of cohesive social capital and cyber-bullying in the cyberspace on the adolescents well-being: mediating effect of interpersonal competence. *Korean Youth Welfare Society*, 16(4), 347-371.
- [48] Kim, Y. S., and Cho, E. Y. (1996) A study on the relationship between a mother's attitude to nursing stress, social support and children's social function. *Human Development Research*, 1(3), 15-24.
- [49] Ko, S. H., and Moon, T. W. (2015). The effect of organizational diligence on the behavior of organizational members. *Management and Information Research*, 33(5), 1-23.

- [50] Korea Communications Commission and Korea Internet and Security Agency (2016). *2015 Cyber Violence Survey Report*.
- [51] Kwon, O. S., and Moon, S. H. (2007). The relations of adolescence's stress, self-control, and impulse buying tendency. *Korean Journal of Youth Studies*, 14(1), 31-46.
- [52] Leary, M. R., Haupt, A. L., Strausser, K. S., and Chokel, J. T. (1998). Calibrating the sociometer: The relationship between interpersonal appraisals and the state self-esteem. *Journal of Personality and Social Psychology*, 74(5), 1290-1299.
- [53] Lee, B. R. (1997). *The relationship between parent's psychological attitude and infant's emotional intelligence* (Doctoral dissertation). Chung-Ang University, South Korea.
- [54] Lee, C. H. (2016). The causes influences and countermeasures of cyberbullying for youth. *Korean Political Communication Association*, 43, 231-260.
- [55] Lee, J. H. (2017). *The effect of cyberbullying victim experiences on the depression and anxiety of early adolescents ; moderating effects of developmental assets*. Master Thesis. Cheongju: Cheongju University.
- [56] Lee, M. S. (2005). *The impact of social support for depression and suicide in the elderly* (Masters dissertation). Seoul Women's University, South Korea.
- [57] Lee, M. Y., and Na, E. Y. (2015). The influence of japan radiation risk information of twitter on optimistic bias: Focusing on the moderation effect of collectivism. *Korean Journal of Journalism and Communication Studies*, 59(6), 339-362.
- [58] Lee, N. H. (2004). *The relationships of self-differentiation with personal relations and behavior problems in adolescence: the mediating effect of conflict resolution strategy*. Master Thesis. Kyungnam: Kyungnam University.
- [59] Logue, A. W. (1995). *Self control: Waiting until to-morrow for what you want today*. Englewood Cliffs, NJ: Prentice Hall.
- [60] Manzeske, D. P., and Stright, A. D. (2009). Parenting styles and emotion regulation: The role of behavioral and psychological control during young adulthood. *Journal of Adult Development*, 16(4), 223-229.
- [61] Mishna, F., Kassabri, M., Gadalla, T., and Daciuk, J. (2012). Risk factors for involvement in cyber bullying: victims, bullies and bully-victims. *Children and Youth Services Review*, 34, 63-70.
- [62] Moon, S. A. (2016). *A study on factors influencing on attitude to cyber-bullying by youth : Focusing on mobile instant messenger* (Masters dissertation). Chung-Ang University, South Korea.
- [63] Oliver, R. L. (1999). Whence consumer loyalty? *Journal of Marketing*, 63(4), 33-44.
- [64] Padilla-Walker, L. M., and Nelson, L. J. (2012). Black hawk down? Establishing helicopter parenting as a distinct construct from other forms of parental control during emerging adulthood. *Journal of Adolescence*, 35, 1177-1190.
- [65] Park, A. C. (2001). A causal relationship between adaptation of a college student's home and school life and individualization and self-identity. *Childhood Education*, 10(1), 161-173.
- [66] Park, I. S., Oh, K. O., and Kim, J. I. (1989). A study on the relationship of social support. *Life Satisfaction and Depression of The Elderly, Chungnam Medical College* 16(1), 245-259.
- [67] Park, J. W. (1985). *A study on the development of social support scale* (Doctoral dissertation). Yonsei University, South Korea.
- [68] Parker, J. G., and Asher, S. R. (1993). Friendship and friendship quality in middle childhood: Links with peer group acceptance and feelings of loneliness and social dissatisfaction. *Developmental Psychology*, 29(4), 611-621.
- [69] Patchin, J. W., and Hinduja, S. (2006). Bullies move beyond the schoolyard: A preliminary look at cyberbullying. *Youth Violence and Justice*, 4(2), 148-169.
- [70] Patchin, J. W., and Hinduja, S. (2011). Traditional and nontraditional bullying among youth: A test of general strain theory. *Youth and Society*, 43(2), 727-751.
- [71] Pillemer, K., and Sutor, J. J. (1991). "Will I ever

- escape my child's problems?" effects of adult children's problems on elderly parents. *Journal of Marriage and Family*, 53(3), 585-594.
- [72] Robbins, B. D. (2013). Enactive cognition and the neurophenomenology of emotion. In: Gordon S. (eds) *Neurophenomenology and Its Applications to Psychology*. Springer, New York, NY.
- [73] Robert, S., and Peterk. S. (2008). *Cyberbullying: Another main type of bullying?* <https://doi.org/10.1111/1/j.1467-9450.2007.00611.x>
- [74] Sarstedt, M., Henseler, J., and Ringle, C. M. (2011). Multi-group analysis in partial least squares (PLS) path modeling: Alternative methods and empirical results. *Advances in International Marketing*, 22, 195-218.
- [75] Smith, J., and Goodnow, J. J. (1999). Unasked-for support and unsolicited advice: Age and the quality of social experience. *Psychology and Aging*, 14(1), 108-121.
- [76] Somers, P., and Settle, J. (2010). The helicopter parent: Research toward a typology. *College and University*, 86, 18-24.
- [77] Spokas, M., and Heimberg, R. G. (2009). Overprotective parenting, social anxiety, and external locus of control: Cross-sectional and longitudinal relationships. *Cognitive Therapy and Research*, 33, 543-551.
- [78] Uchino, B. N. (2009). Understanding the links between social support and physical health: A lifespan perspective with emphasis on the separability of perceived and received support. *Perspectives in Psychological Science*, 4, 236-255.
- [79] Ungar, M. (2009). Overprotective parenting: Helping parents provide children the right amount of risk and responsibility. *The American Journal of Family Therapy*, 37, 258-271.
- [80] Watson, D., Clark, L. A., and Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The panas scales. *Journal of Personality and Social Psychology*, 54(6), 1063-1070.
- [81] Wheaton, B. (1985). Models for the stress-buffering functions of coping resources. *Journal of Health and Social Behavior*, 27, 78-89.
- [82] Wolfe, J., and Charney, D. S. (1991). Use of neuro psychological assessment in post traumatic stress disorder. *Psychol Assess*, 3, 573-580.

◆ About the Authors ◆

---



**Yituo Feng**

Yituo Feng is a Ph.D. Candidate in Department of MIS, Chungbuk National University in Korea. He received a bachelor's degree at Department of Political Science and Law of Shandong University in China and a master's degree at Department of MIS, Chungbuk National University in Korea. His research interests include e-Commerce, Blockchain, and Supply Chain Management. His papers was presented at leading conferences hosted by KMIS, KASBA, and KITA.



**Sundong Kwon**

Sundong Kwon is a Professor of Department of MIS, Chungbuk National University in Korea. He received his Ph.D. in MIS from Seoul National University. His research interests include e-Commerce Strategy, National Culture, Personal Information Protection, and Supply Chain Management. His papers have appeared in *British Journal of Management*, *Journal of MIS Research*, *Journal of Information Technology Applications and Management*, *Information Systems Review*, and *Korean Management Review*.

---

Submitted: June 22, 2019; 1st Revision: September 30, 2019; 2st Revision: January 5, 2020; Accepted: January 6, 2020