

# ***The Impact of Suffering from Cyberbullying on Individual Mental Health: The Moderating Role of Personality***

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**Abstract:** As the rapid development of networking, cyberbullying has become a widely concerned topic since it happens quite often. Suffering from cyberbullying (cybervictimization) may have negative impact on victims' mental health. However, different people may be influenced differently according to some factors. Considering the moderating effect of personalities in the mental discomfort caused by cyberbullying. This study collects the participant's data (n = 201) from Beijing and Guizhou throughout the internet, focusing on the victims and using moderating effect analysis to find out whether the Big five personality traits has moderated the effect people hurt by cyberbullying. The study finds out that neuroticism is the only moderator. That means, for those who both suffered from cyberbullying, people higher in neuroticism may suffer more severer mental discomfort than those who are low. In nutshell, when faced with cyberbullying, high-level neuroticism people may be easier to get mental hurt. In counseling and intervention efforts dealing with those who suffered from cyberbullying, people should spend more time caring those who are high in neuroticism, since they are more vulnerable and susceptible to this type of violence.

**Keywords:** Cybervictimization, mental health, personality traits, moderating.

## **1. Introduction**

“Bullying” is often considered as a type of behavior which a group or an individual intentional attacking the victim(s) with aggressive thoughts, while the victim cannot defend himself or herself [1]. With the development of social networking, bullying may happen and increase with the internet as well, which is called as “Cyberbullying” or “Online bullying” [2,3]. Cyberbullying participants includes three types of roles: victims (30-40%), bullies (15-20%), victimized bullies (7-13%) [3]. Another study pointed out that the percent of bystanders in cyberbullying is about 75% [4]. The definition of cyberbullying remains inconsistent, while there are many studies based on similar (while maybe a little different in perspectives) concepts [2,5,6].

According to American Psychological Association (APA), personality is characteristics and behaviors' model uniquely dealing with daily life, including interest, self-conception, core value etc. which can be divide into many types according to different criteria or theoretical models [7]. The mostly used personality traits (PTs) in cyberbullying studies is the Big-five PTs.

The Big Five PTs is a personality theoretic model which concludes five core dimensions (including Openness, Conscientiousness, Extraversion, Agreeableness and Neuroticism, also called as the

OCEAN of personality) [8]. These dimensions are independent to each other, and they can explain and give predictions of personal mental reactions and physical behaviors [9].

Mental health is becoming a hot topic discussed and studied with the development of society. It is a mental state which helps people behave well in many fields of everyone's daily life, like studying, working, solving problems, achieving goals and so on [10]. It is important since people were little, and until their late adulthood. As for the present study, the author chooses negative factors (like depression, anxiety, PTSD, suicidal risk etc.) as the research objects.

With the advancement of society and technology, social media has gained widespread usage across the globe. However, the online-communication is not always friendly, there are also online attacks happening and increasing with the development of social-networking. Offline attacks mostly do harm to the victims' mental health, while the similar result has been found with bullying online, including depression, anxiety, PTSD etc. It can be said that the more people using and get stuck in the network and social media, it is more possible for people to be involved in cyberbullying, no matter they are bullies, victims, victimized bullies or just by-standers.

Personality is a factor which is influential in psychological and behavioral, while now exists a need for more studies focusing on the personalities' influence on mental health in cyberbullying situation. This paper tries to fill in the blank of this field and try to provide some possible suggestions for dealing with cyberbullying.

## **2. Review**

### **2.1. The Impact of Cyberbullying on Mental health**

Problems with mental health have been studied with cyberbullying, its impact on humans' mental health needs to be analyzed carefully [11]. The positive indicators and negative indicators are both measured in cyberbullying, while the latter is more common. Cyberbullying may cause mental wounding [12]. Mental wounding refers to traumas which influences people's mental statement and behavioral mode for a long time, called as "historical trauma" and "soul wounds" [13]. Cyberbullying will also cause a series of mental disorders, including depression, anxiety, post-traumatic stress symptoms etc. [14-16]. Some of the victims may also suffer from insomnia and experiencing lower job-satisfaction as a manifestation of impact on mental health [17,18]. The most effected group is students [19]. Cyberbullying will influence their school behavior as well as letting them engage in anti-social behavior [20,21]. Study shows cyberbullying is one of the main factors of appearance anxiety in college students and may exaggerate as social anxiety [22]. A study focusing on Malaysian medical students shows cyberbullying will increase the level of anxiety, pressure and depression [23].

### **2.2. The Moderating Role of Personality in the Effect of Cyberbullying on Mental health**

Personality as a moderating variable has been studied in some research, and they've already found relationships between some PTs and mental health. A study considering the moderating effect of PT in relationships between religiosity and mental health of college students using Big Five PTs found that openness to experience and agreeableness significantly moderated the relationship [24]. Another study tried to figure out the relationship between social participation and mental health with the moderating factor-personality. This finding also finds results supportive to the researchers' assumptions (openness positively moderate, and neuroticism on the contrary) [25]. A study focused on the bridging effect of personalities between family relationship and depression also shows similar results [26].

Considering the moderating role of PTs in cybervictims' mental health, we may give an assumption that different levels of PTs types (which may have many) can moderate the influence of

online bullying on those who are hurt and may lead to different influences. Specific type of personality may moderate the impact of cyberbullying on mental health.

### 2.3. Hypothesis and Significance

To sum up, we can draw a conclusion that although there might be some dispute in details, cyberbullying is harmful to people's mental health, especially victims. Moreover, considering former studies results, we can draw reasonable and reliable assumption that personality can be a moderating factor among different situations and mental health. However there exists little studies using this assumption, so that is the theoretical meaning of this study. Completing this research can better enrich the theory of the impact of cyberbullying on mental health.

This finding may also fill in the gap of how personality really contribute to the influence of cyberbullying, which means different people (specifically, different in their levels of one specific PTs) may be influenced differently when they are faced with online bullying. This can also help us to deal with cyberbullying better, since findings have practical implications for treatment.

## 3. Methods

### 3.1. Participant and Procedure

The expected participants are university students. According to former studies, college students are one of the main groups who suffer from online bullying [27-30]. Firstly, the author basically collects the demographic data of participants, then ask participants to finish Questionnaire or Scale mentioned bellow. The author recruits 201 university students from Beijing and Guizhou, as participants receiving this recruit from WeChat groups and universities' online forum.

Participants (who finished all the scales/questionnaires) data will be analyzed and they received 5 Yuan as subject fee. After the research, they will also be given advice to deal with cyberbullying as a reward if they are willing to know more.

### 3.2. Measurement

#### 3.2.1. Cybervictimization

Cyber victim and bullying scale [31]. The scale was revised by Yu. Y and includes 12 items with 3 dimensions, which are: Cyberbullying Verbal Harassment (5 items), Anonymity (2 items) and Cyber Fraud (5 items) [32]. The scale uses 5-point Likert scale (1 = *never*, 5 = *always*), while the higher score is, the more severe experience of cyberbullying. The Cronbach's  $\alpha$  is 0.914, which represents good reliability and validity.

#### 3.2.2. Mental Health

Depression, Anxiety and Stress-Scale, referred to as DASS-21, is a widely used self-report scale, and it is used to measure the severe level of depression, anxiety and stress by three subscales. Each subscales contains 7 questions ranging from 0 (*never*) to 3 (*always*) for each [33]. DASS-21 has become an effective tool for counselling use and scientific research with its' high reliability and validity.

#### 3.2.3. Personality

Chinese Big Five Personality Inventory Brief Version (CBF-PI-B) is a brief version of the Big Five personality questionnaire in Chinese cultural background. It contains 40 items with 8 for each

dimension, and using Likert 5 (1 = *completely disagree*, 5 = *completely agree*) as scoring method. Internal consistency of CBF-PI-B ranges from 0.764 to 0.814 with the average of 0.793. The test-retest reliability coefficients range from 0.672 (Agreeableness) to 0.811 (Openness), with an average of 0.742 [34-36].

### 3.3. Software, Hardware and Data analysis

The author stores and analyses the data by using the latest version of Microsoft Excel (data collecting and storage), SPSSAU (Online SPSS analytical website, data analysis) and Microsoft Word (Table drawing) on MacBook Pro with macOS 14.5.

Data analysis follows several steps:

First, the data preparation and descriptive analysis.

As data are collected from the internet, and all the participants are not allowed to submit if they had left 1 question or more not answered. In the meantime, the time used for filling the questionnaire is analyzed and they meet the criteria of valid data. Therefore, no subject data was excluded ( $n = 201$ ).

The author analyzed the demographic data, and then finished descriptive analysis. Using Pearson correlation to analysis the relationship between each variable except for gender, grade and time spent on the internet and output a correlation matrix.

Second, the moderation effect analysis.

After collecting all the data and descriptive analysis, the independent variable (to what extend the cybervictims' suffering, objective indicators, "X") and the moderator (the Big five PTs' different dimension, "Z") should be mean-centered. It is to calculate their mean and subtract corresponding mean from each observation. This helps reduce the multicollinearity issues and make the explanation of interaction items more clearly.

Then, the author is creating the interaction term. By calculating the value of product term  $X*Z$ . Using statistic software SPSSAU to perform moderation analysis. Put the total score of "Cybervictimization" as objective indicator (1 dimension: only use the total score), each five dimensions of the Big five PTs as the moderators (5 subscales: neuroticism, openness to experience, conscientiousness, agreeableness, extroversion), the level of pressure, anxiety, depression & the total score as the dependent variables (4 variables, which include one total score and three subscales). The analysis was conducted 20 (5 for PTs \* 4 for mental health variables) times, with gender, grade, and internet usage duration controlled for in each instance.

## 4. Results

The analysis of mental discomfort and cybervictimization differences based on gender was conducted using an independent sample t-test, and the results are presented in Table 1, which shows there are no significant differences in both the total score and different subscales between gender.

Table 1: Differences in mental discomfort and Cybervictimization between genders.

	Gender(M±SD)		<i>t</i>	<i>p</i>
	Male ( $n = 121$ )	Female ( $n = 80$ )		
Stress	15.37±5.08	15.36±5.12	0.013	0.990
Anxiety	14.51±4.95	14.28±5.02	0.331	0.741
Depression	14.66±4.99	13.85±5.27	1.103	0.271
Total score of mental discomfort	44.55±14.39	43.49±14.50	0.509	0.611
Cyberbullying Verbal Harassment	13.80±4.93	13.34±4.74	0.664	0.508
Anonymity	5.46±1.88	5.58±2.16	-0.379	0.705
Cyber Fraud	12.74±4.82	12.41±4.66	0.471	0.638
Total score of Cybervictimization	32.00±11.07	31.32±10.66	0.429	0.668

\*  $p < 0.05$  \*\*  $p < 0.01$

By using correlation matrix with the method of Pearson correlation, the author gets a basic relation about all the variables (excepted for controlled variables like gender, grade and time spent on the internet). The results are depicted in Table 2.

Table 2: Descriptive statistics and correlation of cyberbullying behavior.

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13
1 Total score of cybervictimization	31.731	10.887	1												
2 Cyberbullying Verbal Harassment	13.617	4.846	0.957**	1											
3 Anonymity	5.507	1.990	0.841**	0.725**	1										
4 Cyber Fraud	12.607	4.748	0.964**	0.869**	0.769**	1									
5 Neuroticism	23.612	7.546	0.715**	0.677**	0.630**	0.686**	1								
6 Conscientiousness	29.085	4.667	0.145*	0.164*	0.093	0.125	0.093	1							
7 Agreeableness	26.577	3.981	0.179*	0.133	0.152*	0.212**	0.236**	0.423**	1						
8 Openness to experience	29.428	6.030	0.192**	0.212**	0.160*	0.157*	0.062	0.557**	0.284**	1					
9 Extroversion	27.229	4.772	0.020	0.049	0.080	0.038	0.003	0.541**	0.381**	0.527**	1				
10 total score of psychological discomfort	44.124	14.403	0.740**	0.690**	0.671**	0.712**	0.773**	0.221**	0.161*	0.139*	0.0	1			
11 Stress	15.368	5.088	0.687**	0.637**	0.610**	0.670**	0.768**	0.176*	0.173*	0.122	0.0	0.953**	1		
12 Anxiety	14.418	4.966	0.698**	0.642**	0.649**	0.674**	0.746**	0.199**	0.156*	0.071	0.0	0.956**	0.882**	1	
13 Depression	14.338	5.107	0.725**	0.689**	0.654**	0.684**	0.689**	0.255**	0.130	0.201**	0.0	0.941**	0.834**	0.846**	1

Table 2 indicates that most of the Big Five PTs and subscales of mental discomfort have significant relationships with cybervictimization, except for the Extroversion.

The moderation effect analysis is shown in Table 3. The author chooses the total score of cybervictimization as the objective variable(X), the level of different dimension of mental discomfort as dependent variable(Y), and the Big 5 PTs as moderators(Z), in the meantime considering other variables (gender, grade and time) as controlled variable. The results are below.

Table 3: The role of personality traits in the moderating relationship between cybervictimization and mental health.

Moderator	Mental discomfort			
	Stress B	Anxiety B	Depression B	Total score B
CV*NEO	.003	.01**	.01**	.023**
CV*OPE	.002	.005	.000	.008
CV*CON	.004	.001	.001	.006
CV*AGR	-.000	-.004	-.000	-.004
CV*EXT	-.002	.001	.004	.003

CV cybervictimization, NEO neuroticism, OPE openness to experience, CON conscientiousness, AGR agreeableness, EXT extroversion

\* p<0.05 \*\* p<0.01

Table 3 shows that the neuroticism is the only dimension of the Big five PTs which is significantly moderating the effects between cybervictimization and mental discomfort total score, while it is also the only one that significant with the subscales including anxiety and depression.

## **5. Discussion**

### **5.1. The Overall Significance**

The present study shows the moderating effect of personality on the impact of cybervictimization on mental health (mainly mental discomfort) in China, which psychologist and researchers has been keen on. Most of the cyberbullying studies have been finished in western countries and this study provide a basic point of view from the oriental culture.

Moreover, although there exist different studies trying to figure out the relationship between cybervictimization and mental health and they have drawn a preliminary conclusion which is “harmful”, and some studies trying to find out the relationship of Big five PTs and cyber-victimization [32], there is still a lack of knowing the relationship between personalities’ moderating effect on the impact, which partly judged by the mental discomfort. This study managed to figure out the moderating relationship of neuroticism in the impact of mental discomfort caused by cybervictimization. Additionally, the finding also indicates that there is no moderating effect in other dimensions of the Big Five PTs.

### **5.2. The Relationship between Cybervictimization and Demographic Data & Online Time**

According to the result, male and female suffer from similar cyberbullying, as well as different grade students. In the meantime, people who spend more time on the internet may suffer from more cyberbullying. This is consistent with former study [32].

The result reminds the researchers and readers those who stare at screens with longer time may have a higher risk of suffering from cyberbullying. Considering the conclusion which cyberbullying is harmful to mental health, it is important to reduce time using electronic devices online and to focus on those who have to spend more time on the internet since they are at a higher risk.

### **5.3. The Differences in Mental Discomfort between Male and Female**

No differences were found between male and female in the mental discomfort after suffering from cybervictimization. That means, when facing the attack online, male and female may experience similar mental hurt. This finding reminds us we should not consider one gender as more vulnerable to cyberbullying, while the other is stronger. Both male and female should be seriously treated to their wounds after their suffering.

### **5.4. The Moderating Role of PTs between Cybervictimization and Mental Discomfort**

After the moderating effect analysis, the author finds out some surprising results.

Firstly, neuroticism has significant moderating effect for the impact. That is same with the hypothesis, for those who have a higher level of neuroticism, they may experience more mental discomfort after being cyberbullied than those low-level people. However, there exist a problem – whether the result is cause by, “the real moderating effect”, or it is because those who are higher in neuroticism originally has higher mental discomfort (which means, their stress, anxiety and depression are not caused by cybervictimization, but just a personality vulnerability to daily matters, or without suffering they still are basically high in mental discomfort).

Secondly, openness to experience is not significant, which is different with original hypothesis. It is an interesting result since in other studies openness is a protective factor to suffering, although not



focusing on cyberbullying [25]. The reasons of this phenomenon remain unclear, but the author assumes that not clearly divide different cyberbullying types may be one reason, including verbal abuse, group violence, sexually harassment so on, but this study haven not focused on special types, which may be one reason for the insignificance, and this needs more further studies.

Thirdly, other personalities' moderating effect are not significant, which is same with former studies and not surprising. However, compared to simply say they are not related, the author thinks it would be better to understand why they are not significant and provide explanations.

## 5.5. Limitations and Future Directions

The author will analyze the limitations from the very start.

Firstly, just as mentioned, the types of cyberbullying need more clarification. The study used cyber victim and bullying scale, it has three dimensions instead of types, while the latter means different performances and it is more realistically. This may cause some results remain difficult to explain, like the insignificance of openness. Further studies may clarify the specific type of cyberbullying, which may help to clarify some unsolved problems.

Secondly, the sampling error. Although the study chose Beijing and Guizhou as investigating places, it still employed a convenience sampling method, which may inevitably introduce some sampling errors, namely, the issue of whether the sample is representative. Future research should adopt stratified sampling that covers a broader geographical area, which may result in better generalizability of the findings in this cultural context.

Thirdly, the influence of cybervictimization may not limited to mental discomfort, even mental discomfort is a wide concept which has many dimensions, and measuring the only three indicators may be incomplete and future studies can find more relationships between other factors, like PTSD and mental wounding. Moreover, it might be difficult for some participants to report their inner feelings, like sad, angry and so on, since people have different levels of inner awareness. And according to this reason, future study can focus on objective external indicators, like eating disorders or insomnia.

Fourthly, the longitudinal study. Existing studies (including this study) mostly are cross-sectional studies and there is a lack of longitudinal studies, which may help us know more about long-term influences of cybervictimization on different individuals.

Finally, the overlapping of identities is also an important problem need to be focused and solved. In cyberbullying, there is sometimes an overlap in identities, where an individual is both a victim and a perpetrator, and there are complex relationships between suffering and attacking, which is one of the limitations. So future studies should take more care on the overlapping of identities and carefully analysis is potential influences.

Other future directions may include intervention evaluation and development, cross-cultural comparisons, the role of social media platforms, the impact of specific populations and psychosocial influence.

## 6. Conclusion

The study focuses on the moderating relationship of the Big Five PTs on the impacted mental discomfort caused by suffering from cyberbullying. By using the moderating effect analysis to a 201-participants sample, the author finds out that the Big Five PTs have a moderating effect on the impact of cyberbullying on victims' mental health, but this effect does not manifest in every dimension. Specifically, neuroticism is significant, indicating that college students with higher level of neuroticism are more sensitive to cyberbullying. This suggests that in counseling and intervention

efforts following cyberbullying, more attention should be paid to these students, and more appropriate and effective measures should be taken.

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