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# Is There a Relationship Between the Number of Female Students Who Were Cyberbullied and the Number of Female Students Who Seriously Considered Attempting Suicide?

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## Abstract

In the United States, cyberbullying has become a major public health concern. Indeed, many people who are victims of cyberbullying consider harming themselves. Because criminal justice practitioners are concerned with public safety, this is an area worthy of study. The general purpose of this study is to investigate whether there is a correlation between the percentage of female students who were electronically bullied and the percentage of female students who seriously considered suicide. Data were collected in 2011, 2013, 2015, and 2017 using a three-stage cluster sample design, which produced a nationally representative sample of students in grades 9–12 who attended public and private schools. As an alternative to avoid the distributional assumptions of independent observations, this study used generalized estimating equations (GEE). The findings revealed that there was no significant difference between the percentage of female students who were electronically bullied and the percentage of female students who seriously considered suicide.

**Keywords:** Cyberbullying, United States, Students, Self-Harm, Suicidal Ideation

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## I. INTRODUCTION

Cyberbullying is the use of electronic or digital media to harass, humiliate, or threaten another person (Holladay, 2010). Cyberbullying is different than face-to-face bullying because electronic communications allow cyberbullies to maintain anonymity, and perpetrators can communicate messages to large audiences very quickly (Schneider, O'Donnell, Stueve, & Coulter, 2012). Although individuals may not want to engage in face-to-face bullying, they may be enticed to engage in cyberbullying because they may feel reduced responsibility and accountability. This is a major problem because 71% of American youth use Facebook, 52% use Instagram, 41% use Snapchat, and 33% use Twitter (Lenhart, 2015). Ninety-two percent of American youth have stated that they go online daily, and 24% of them have stated that they are online constantly. Cyberbullying is a major public health concern because it has been linked to

school problems, social problems, mental health disorders, and suicide (Hase, Goldberg, Smith, Stuck, & Campaign, 2015; Rodríguez-Enríquez, Bennasar-Veny, Leiva, Garaigordobil, & Yañez, 2019; Wood, 2018).

Hundreds of thousands of individuals have experienced cyberbullying, and many of them have experienced it for more than one year (Evans, 2012). Youths who experience cyberbullying are more than twice as likely to hurt themselves or to attempt suicide (Wood, 2018). Thus, cyberbullying is a major social problem that is worthy of study. The current study, which is a correlational study, will add to the body of knowledge by examining data that were collected by the Centers for Disease Control and Prevention.

The research question and the null hypothesis are listed below.

Research Question: Is there a relationship between the percentage of female students who were cyberbullied and the percentage of female students who seriously considered attempting suicide?

Null Hypothesis: There is no relationship between the percentage of female students who were cyberbullied and the percentage of female students who seriously considered attempting suicide.

## II. LITERATURE REVIEW

John et al. (2018) conducted a meta-analysis study on 33 articles from 26 independent studies to determine the relationship between cyberbullying and self-harm or suicidal behaviors in individuals younger than 25 years of age. A major benefit of a meta-analysis is that it provides a quantitative analysis of a large, consolidated body of literature (Haidich, 2010). Using odds ratios as a summary measure of effect size, the findings indicated that, compared with nonvictims, those who experienced cyberbullying were 235% more likely to harm themselves and 257% more likely to attempt suicide (John et al., 2018). In short, victims of cyberbullying were at a greater risk than nonvictims of intentionally hurting themselves.

However, there were several limitations in the John et. al (2018) study. First, because a meta-analysis examines aggregates of data, the relationship between cyberbullying and self-harm for any particular person cannot be determined. Second, a failure to include a majority of existing studies can lead to wrong conclusions (Lee, 2019). Because research studies that do not reject null hypotheses tend to remain unpublished, there may be a bias toward using studies with positive results. This will compromise the validity of a meta-analysis. Third, a meta-analysis relies on shared subjectivity when deciding how similar studies should be combined. Indeed, every form of analysis in a meta-analysis requires some subjective decisions. Finally, quantitative studies do not provide an in-depth understanding of the meanings that the participants have associated with their lived experiences (Berg, 2007).

Hinduja and Patchin (2010) conducted a study and surveyed 1,963 middle school students from one school district in the United States to assess the relationship between cyberbullying and suicide ideation. The students were surveyed on their Internet use and experiences. Respondents

were asked about their experiences with bullying and peer harassment, both online and offline, and thoughts about committing suicide. The researchers utilized logistic regression analysis and found that being a victim of cyberbullying is associated with an increase in suicidal ideation.

However, the Hinduja and Patchin (2010) study has several limitations. First, because the data were not collected over time, it is impossible to determine the proper temporal ordering among the variables. Second, the participants may have engaged in acquiescence bias by simply selecting positive responses over negative responses. Third, recall bias may have occurred due to individuals misrepresenting or distorting facts from previous time periods. Fourth, because the students who were surveyed attended only one school district, they may not necessarily be representative of other populations across the country.

Peng et al. (2019) conducted a study to determine if being a victim of cyberbullying is related to self-harm and suicide attempts. The researchers used a sample of 2,647 Chinese students from 10 junior high schools. Data for self-harm and suicide attempts were collected using a self-administered survey. The psychopathy of each student was assessed using the Strengths and Difficulties Questionnaire. Using multinomial logistic regression, the findings indicated that, compared to nonvictims, victims of cyberbullying were at a greater risk of harming themselves and attempting suicide.

However, the Peng et al. (2019) study has several limitations. First, although the study determined correlational relationships, the study did not indicate causal relationships. Second, because the study was quantitative in nature, it cannot reveal the meanings that participants have given to various phenomena (Berg, 2007). Finally, the students in the study were raised in a social learning environment that is specific to China, which may be different in a meaningful way from other cultures (Peng et al., 2019). In short, the study's findings cannot be generalized to other populations that do not match the sample's characteristics.

Peng and Davis (2017) conducted a study to investigate the correlation between the percentage of students who were electronically bullied and the percentage of students who seriously considered suicide. Data were collected in 2011, 2013, and 2015 using a three-stage cluster sample design, which produced a nationally representative sample of students in grades 9–12 who attended public and private schools. The researchers employed linear regression analysis and the findings indicated that once female students were cyberbullied, they seriously considered suicide.

However, the Peng and Davis (2017) study has several limitations. First, the study was not an experimental study and cannot determine causal relationships. Second, because the sample was limited to American students in grades 9–12 in public and private schools, the findings cannot be generalized to other populations that do not match the sample's characteristics. Finally, linear regression assumes that the observations were independent, which may be a problem because data in the study were collected multiple times from the same states (Norusis, 2008; Su, 2020).

Kyriacou and Issitt (2018) explored the perceptions of student teachers regarding cyberbullying by students against other students. Data were collected from 97 secondary student

teachers at a university in England who were mostly in their early 20s and who attended high school when cyberbullying was becoming common. The sample consisted of 41 males, 54 females, and two who did not indicate their sex. The participants were provided a questionnaire that asked them to express their views about the motives behind cyberbullying and about the actions that can be implemented to deal with the problem. Most of the questions on the survey used a Likert-type scale. Based on mean scores and on one open-ended question, the findings indicated that student teachers believe that cyberbullying can be reduced through education on e-safety and by implementing heavy sanctions against perpetrators.

However, the Kyriacou and Issitt (2018) study has several limitations. First, because the study was qualitative in nature, it failed to provide patterns of relationships through numerical representations. Second, the participants were student teachers who lived in England, and they may not necessarily reflect the opinions of seasoned teachers in America. Third, because Likert-type scales were used, there is the possibility that the participants a) committed central tendency bias by simply selecting the middle option rather than the best option, b) committed acquiescence bias by simply selecting positive responses over negative responses, and c) were forced to select options that did not accurately represent their realities (Antonovich, 2008). Finally, the sample consisted of student teachers who, compared to seasoned teachers, may not be fully aware of the variety of resources available at educational institutions.

Finally, Paul, Smith, and Blumberg (2012) investigated the students' perceived effectiveness of coping strategies and school interventions related to traditional bullying and cyberbullying. A sample of 217 students, which consisted of 118 males and 99 females in grades 7-9, completed a worksheet on coping strategies. A sample of 190 students, which consisted of 95 males and 95 females in grades 7-9, evaluated school interventions. The worksheets that were used to collect the data were designed to measure student perception of different coping strategies and school interventions related to traditional bullying and cyberbullying. The analysis of the item ratings was conducted using the Wilcoxon signed ranks test. In addition, comparisons between item ratings and participant role type (i.e., victim, bully, or no role) were conducted using the Kruskal-Wallis test and the Mann-Whitney U post-hoc test. Although the students felt that seeking help and advice were effective coping mechanisms, and that school sanctions, informal approach, and support approach were effective intervention mechanisms, the findings indicated that the most helpful approach requires the support of family members, especially the parents.

However, the Paul et al. (2012) study has several limitations. First, the findings cannot necessarily be generalized to other individuals who do not match the sample's characteristics. Second, because the application of anti-bullying interventions is unique to each school, it is important to exercise caution in drawing conclusions. Finally, the coping skills adopted by each student might be influenced by the atmosphere of the student's particular environment.

### **III. METHODOLOGY**

#### **Sample**

This study examined electronic government-based second-hand data gathered from the Youth Risk Behavior Surveillance System (YRBSS) in 2011, 2013, 2015, and 2017 (Eaton et al., 2012; Kann et al., 2014; Kann et al., 2016; Kann et al., 2018). The data were collected by the Centers for Disease Control and Prevention, which is devoted to the public's safety and health. A three-stage cluster sample design produced a nationally representative sample of American students in grades 9–12 who attended public and private schools. The standard questionnaire in 2011 and 2013 included 86 questions; the standard questionnaire in 2015 and 2017 included 89 questions.

#### **Statistical Analysis**

Because the observations for the four questionnaires used in 2011, 2013, 2015, and 2017 were from the same states, a certain amount of correlation/dependence was expected (Su, 2020). Indeed, a prior study that used data from the same surveys attempted to use Poisson regression, a parametric statistic, but there was a very large overdispersion problem, likely due to a lack of independence among the data values (Davis, 2020; Su, 2020). In the Davis (2020) study, the Poisson distribution assumed that the mean and variance were equal (i.e., a ratio of one). However, the variance was actually 5,036 times greater than the mean, which is a very large overdispersion problem. Thus, in order to address this overdispersion problem, generalized estimating equations (GEE), a nonparametric statistic, was used in the current study to assess the relationship between the number of females who were cyberbullied and the number of females who seriously considered suicide. Although GEE avoids the distributional assumptions of independent observations, the use of a nonparametric statistic would usually result in some loss of efficiency for estimation of the coefficients relative to the optimal likelihood-based estimates when distributional assumptions are satisfied (Fitzmaurice, Laird, & Ware, 2004).

### **IV. RESULTS**

GEE was used to assess the relationship between the number of females who were cyberbullied (i.e., predictor variable) and the number of females who seriously considered suicide (i.e., outcome variable). The findings indicate that there is no relationship between the predictor variable and the outcome variable ( $p = 0.625$ ). Therefore, the null hypothesis was accepted.

Table 1. The Results of Parameter Estimates Under GEE.

Parameter Estimates										
Parameter	B	Std. Error	95% Wald Confidence Interval		Hypothesis Test			Exp(B)	95% Wald Confidence Interval for Exp(B)	
			Lower	Upper	Wald Chi- Square	df	Sig.		Lower	Upper
(Intercept)	-1.330	.1771	-1.677	-.983	56.441	1	.000	.264	.187	.374
Female Cyberbully Rate (Scale)	-.435	.8905	-2.180	1.310	.239	1	.625	.647	.113	3.707

Events: Female Suicide Rate

Trials: Female Sample Size

Model: (Intercept), Female Cyberbully Rate

## V. DISCUSSION

The results of the GEE assessment indicate that there is no statistically significant relationship between the number of females who were cyberbullied and the number of females who seriously considered suicide. The results are important because an earlier research study conducted by Peng and Davis (2017) used much of the same data, and their findings indicated that female students who were cyberbullied were more likely to have seriously considered suicide. However, unlike the current study, Peng and Davis assumed that the observations were independent. When the observations were not considered independent, as in the current study, female students who were cyberbullied were not more likely to have seriously considered suicide. This study is important because it shows the importance of assumptions, and how those assumptions can impact the findings.

### Limitations

There are several limitations in this study. First, because the sample is limited to female students in grades 9-12, the findings cannot be generalized to other populations. Second, it is not possible to know the actual number of female students who were electronically bullied because many students who are bullied never officially report it to authorities (Loveless, 2020). Third, because cyberbullying is a recent issue, there are only four youth risk behavior surveillance surveys of available data. Thus, the amount of data available is less than optimal. Fourth, because the data used in the study were second-hand and collected for a different reason, the data values cannot be more clearly defined. Finally, because the study is quantitative in nature, it

does not provide an in-depth understanding of the meanings that the participants have associated with their lived experiences (Berg, 2007).

#### Further Research

Following are ideas for additional research. First, to eliminate the problem of using different sample sizes from each state, a researcher could collect original data using a fixed sample size from each state. In addition, if the data were collected at one point in time, then the researcher could help ensure that the data values are independent. By doing this, the researcher may be able to use a parametric statistic to assess the relationship between the number of females who were cyberbullied and the number of females who seriously considered suicide. This is important because a parametric statistic will usually have more statistical power than will a nonparametric statistic (Field, 2005; Su, 2020). Second, even if a study indicates that there is a relationship between the number of females who were cyberbullied and the number of females who seriously considered suicide, it will not indicate why they seriously considered suicide. A qualitative study needs to be performed to address the reasons why individuals feel as they do. Finally, specific theories that are believed to be linked to cyberbullying can be studied. Whatever theory is used to explain the problem, the same theory should be used to resolve the problem. To do this, data must be collected in a manner that is in alignment with the theory of interest. For example, if it is believed that the deterrence theory can be used to reduce cyberbullying, then data on deterrence and cyberbullying need to be collected. If the fear of punishment is quantified and is shown to be inversely related to the amount cyberbullying, then a resolution based on the celerity, certainty, and severity of punishment can be implemented to address the problem (Barkan, 2006).

#### REFERENCES

- Antonovich, M.P. (2008). *Office and SharePoint 2007 user's guide: Integrating SharePoint with Excel, Outlook, Access, and Word*. Berkeley, CA: Apress.
- Barkan, S. (2006). *Criminology: A sociological understanding* (3rd ed.). Upper Saddle River, NJ: Pearson Prentice Hall.
- Berg, B. (2007). *Qualitative research methods for the social sciences* (6th ed.). Boston, MA: Pearson Education, Inc.
- Davis, W.L. (2020). Is There a Difference Between Democrat and Republican States in the Number of Female Students Who Experienced Cyberbullying? (2020). *Lincoln Memorial Journal of Social Sciences*, 1(1), Article 1.
- Eaton, D.K., Kann, L., Kinchen, S., Shanklin, S., Flint, K.H., Hawkins, . . . Whittle, L. (2012). Youth risk behavior surveillance—United States, 2011. *Morbidity and Mortality Weekly Report: Surveillance Summaries*, 61(4), 1-162. Retrieved from <https://www.cdc.gov/mmwr/pdf/ss/ss6104.pdf>
- Evans, G. (2012). Cyberbullying leaves its victims close to suicide (features). *Western Mail (Cardiff, Wales)*, 6, 6.



- Field, A. (2005). *Discovering statistics using SPSS* (2nd ed.). Thousand Oaks, CA: Sage.
- Fitzmaurice, G. M., Laird, N. M., & Ware, J. H. (2004). *Applied longitudinal analysis*. Hoboken, NJ: John Wiley & Sons.
- Haidich, A.B. (2010). Meta-analysis in medical research. *Hippokratia: Quarterly Medical Journal*, 14(1), 29-37.
- Hase, C.N., Goldberg, S.B., Smith, D., Stuck, A., & Campaign, J. (2015). Impacts of traditional bullying and cyberbullying on the mental health of middle school and high school students. *Psychology in the Schools*, 52(6), 607-617.
- Hinduja, S., & Patchin, J.W. (2010). Bullying, cyberbullying, and suicide. *Archives of Suicide Research*, 14, 206-221. doi: 10.1080/13811118.2010.494133
- Holladay, J. (2010). Cyberbullying: The stakes have never been higher for students – or schools. *Teaching Tolerance*, 38. Retrieved from <https://www.tolerance.org/magazine/fall-2010/cyberbullying>
- John, A., Glendenning A.C., Marchant, A., Montgomery, P. Stewart, A., Wood, S., Lloyd, K., Hawton, K. (2018). Self-Harm, Suicidal Behaviours, and Cyberbullying in Children and Young People: Systematic Review. *Journal of Medical Internet Research*, 20(4), e129. doi: 10.2196/jmir.9044
- Kann, L., Kinchen, S., Shanklin, S.L., Flint, K.H., Hawkins, J., Harris, W.A., . . . Zaza, S. (2014). Youth risk behavior surveillance—United States, 2013. *Morbidity and Mortality Weekly Report: Surveillance Summaries*, 63(4), 1-172. Retrieved from <https://www.cdc.gov/mmwr/pdf/ss/ss6304.pdf>
- Kann, L., McManus, T., Harris, W.A., Shanklin, S.L., Flint, K.H., Hawkins, . . . Zaza, S. (2016). Youth risk behavior surveillance—United States, 2015. *Morbidity and Mortality Weekly Report: Surveillance Summaries*, 65(6), 1-180. Retrieved from [https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2015/ss6506\\_updated.pdf](https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2015/ss6506_updated.pdf)
- Kann, L., McManus, T., Harris, W.A., Shanklin, S.L., Flint, K.H., Hawkins, J., Queen, B., . . . Ethier, K.A. (2018). Youth risk behavior surveillance—United States, 2017. *Morbidity and Mortality Weekly Report: Surveillance Summaries*, 67(8), 1-479. Retrieved from <https://www.cdc.gov/healthyyouth/data/yrbs/pdf/2017/ss6708.pdf>
- Kyriacou, C., & Issitt, J. (2018). Student teachers' perceptions of cyberbullying in schools. *The Psychology of Education Review*, 42(2), 23-27.
- Lee, Y.H. (2019). Strengths and Limitations of Meta-Analysis. *The Korean Journal of Medicine*, 94(5), 391-395.
- Lenhart, A. (2015). Teens, social media & technology overview 2015. *Pew Research Center*. Retrieved from <http://www.pewinternet.org/2015/04/09/teens-social-media-technology-2015/>
- Loveless, B. (2020). *Bullying Epidemic: Facts, Statistics and Prevention*. Retrieved from <https://www.educationcorner.com/bullying-facts-statistics-and-prevention.html>
- Norusis, M.J. (2008). *SPSS 16.0 guide to data analysis*. Upper saddle River, NJ: Prentice Hall.
- Paul, S., Smith, P.K., Blumberg, H.H. (2012). Comparing student perceptions of coping strategies and school interventions in managing bullying and cyberbullying incidents. *Pastoral Care in Education*, 30(2), 127-146.
- Peng, Y., & Davis, W. (2017). Cyberbullying & suicidal thoughts in the United States. *Asian Academic Research Journal of Social Science & Humanities*, 4(7), 102-109.
- Peng, Z., Klomek, A.B., Li, L., Su, X., Sillanmaki, L., Chudal, R., & Sourander, A. (2019). Associations between Chinese adolescents subjected to traditional and cyber bullying and

- suicide ideation, self-harm and suicide attempts. *BMC Psychiatry*, 19, 324. Retrieved from <https://doi.org/10.1186/s12888-019-2319-9>
- Rodríguez-Enríquez, M., Bennasar-Veny, M., Leiva, A., Garaigordobil, M., & Yañez, A.M. (2019). *BMC Public Health*, 19(1), 1-7.
- Schneider, S.K., O'Donnell, L., Stueve, A., & Coulter, R.W.S. (2012). Cyberbullying, school bullying, and psychological distress: A regional census of high school students. *American Journal of Public Health*, 102(1), 171-177.
- Su, Y. (2020). *Dr. Su Statistics*. Retrieved from <https://sites.google.com/site/drsustat/>
- Wood, J. (2018). Cyberbullying Victims May Be Twice as Likely to Self-Harm and Show Suicidal Behaviors. *Psych Central*. Retrieved from <https://psychcentral.com/news/2018/04/22/cyberbullying-victims-may-be-twice-as-likely-to-self-harm-and-show-suicidal-behaviors/134780.html>