Do Victims of Cyberbullying have higher levels of Depression, Anxiety, and Alcohol use compared to non-cyberbullied students?

Abstract

Cyberbullying has become a significant issue for many students (Garett, Lord, & Young, 2016). Unfortunately, the vast majority of research has focused on adolescents and children (Privitera & Campbell, 2009). The aim of this study is to investigate the relationship between cybervictimisation, depression, anxiety, and alcohol use in university students. The participants were aged between 18 to 52 years (*n*=144, 62% female) completed four self-report questionnaires looking at cybervictimisation, depression, anxiety, and alcohol use. Fifty-one percent of students reported experiencing cybervictimisation. It was found that there was a significant relationship between depression and cybervictimisation scores. It was also found that there was a significant difference for anxiety and depression among students that reported cybervictimisation and non-victimised students. The finding suggests that cybervictimisation may have a negative effect on a student's psychological well-being but may be just one of many issues that negatively affect students mental health.

Introduction

Background

Cyberbullying also known as cyber-harassment (Beran & Li, 2005) and online bullying (Patchin & Hinduja, 2006) has seen a significant increase in the past decade. This has coincided with an increase in the use of technology (Kim et al., 2017; Yubero et al., 2017) and social media (Sánchez et al., 2016). Juvonen and Gross (2008) found that spending 3 or more hours a day online increased the risk of cybervictimisation. With 16 to 24 year olds on average spending 27.6 hours a week online (Ofcom, 2015). The prevalence of cybervictimisation among university students is estimated to be between 10 to 15 percent (Finn, 2004). With 9.8 percent of students having experienced some form of cybervictimisation (Yubero et al., 2017).

Defining Cyberbullying

There is no standardised definition for cybervictimisation (Peebles, 2014; Selkie, Kota, Chan, & Moreno, 2015). Although, many definitions come from traditional bullying. Olweus (1993) stated that there are three behaviours necessary for traditional bullying to take place: (1) Intention, (2) Repeated, and (3) A power imbalance (Olweus, 1993). One definition that is commonly used for cyberbullying is; *"An aggressive, intentional act carried out by a group or individual, using electronic forms of contact, repeatedly and over time against a victim who cannot easily defend him or herself"* (Smith et al., 2008, p.376). Unlike traditional bullying, there is no physical contact between the perpetrator and victim (Dehue, Bolman, & Völlink, 2008; Mason, 2008; Willard, 2006). Olweus (1994) stated that repeated contact is necessary for traditional bullying. However, researchers have argued that repeated victimisation is not always necessary (Privitera & Campbell, 2009) if one incident of victimisation has a long-lasting impact

on the victim (Besag, 1989). For example, one incident of 'revenge porn' (publishing sexual photos or videos without the other parties consent; Kitchen, 2015) may have far more of a psychological impact on the victim (Bates, 2017) compared to several malicious messages being sent via Facebook or Twitter. Although, it is also argued that for cyberbullying to occur repeated victimisation is necessary (DeHue et al., 2008). Bauman, Underwood, and Card (2012) argue that if cyberbullying only happens the once then this is cyber-aggression (one-off) and not cyberbullying (multiple and repeated). Thus, there may be a misclassification of cyberbullying that may be over generalising the prevalence (Schenk & Fremouw, 2012).

Impact of cyberbullying

Being a victim of cyberbullying can have a major impact on an individual's psychological, physical, and social well-being. Past research has found that victims of cyberbullying have an increased risk of developing depression (Feinstein, Bhatia, & Davila, 2014; Hunt, Peters, & Rapee, 2012; Kokkinos, Antoniadou, & Markos, 2014; Schenk & Fremouw, 2012), anxiety (Fahy et al., 2016; Kokkinos et al., 2014; Schenk & Fremouw, 2012), alcohol abuse (Peleg-Oren, Cardenas, Comerford, & Galea, 2012), self-harm (Day, 2014), paranoia (Schenk & Fremouw, 2012), eating disorders (Cowie, 2013), and suicide ideation (Cowie, 2013; Feinberg & Robey, 2008; Selkie et al., 2015). Some cases of cyberbullying have resulted in blackmail (Katzer, Fetchenhauer, & Belschak, 2009) and some have ended in the suicide of the victim (El Asam & Samara, 2016; Peebles, 2014; Raskauskas & Stoltz, 2007; Schenk & Fremouw, 2012). Crosslin and Crosslin (2014) also found that victims of cyberbullying avoided new friendships with peers. Furthermore, students that are cyberbullied have lower academic performance (Nakamoto & Schwartz, 2010; Patchin & Hinduja, 2008). Many students also work

while at university and cyberbullying may not only affect their academic life but also their work life too. Employees that are cyberbullied have reported poorer job performance (Snyman & Loh, 2015) and lower job satisfaction (Farley et al., 2015).

Previous literature

The vast majority of research that looks at cyberbullying focuses on adolescents and children (Privitera & Campbell, 2009; Snyman & Loh, 2015; Tomșa, Jenaro, Campbell, & Neacșu, 2013; Wright, 2016), with the prevalence of cyberbullying for this age group is between 20 to 40 percent (Tokunaga, 2010). A later systematic review on adolescents found that the prevalence of cyberbullying was between 6.5 to 35.4 percent (Bottino et al., 2015). However, there is only a small amount of cyberbullying research that focuses on university students and young adults (Schenk, Fremouw, & Keelan, 2013; Selkie et al., 2015). Feinstein, Bhatia, and Davila (2014) looked at university students at two-time points three weeks apart. They found that cyberbullying increases the risk of rumination which resulted in greater levels of depression over this time period (Feinstein et al., 2014). Wright (2016) conducted another longitudinal study looking at college students at four-time points over four years. They found that suicidal ideation, depression, and anxiety increased the longer the student was the victim of cyberbullying. They suggested that cyberbullying contributed to this increase over time (Wright, 2016). Schenk and Fremouw (2012) conducted research looking at university students and found that there was a significant difference for anxiety and depression between victims and a control group. Na, Dancy, and Park (2015) found a significant relationship between cyberbullying scores and anxiety and depression for students that reported being a victim of cyberbullying. This was also supported by Tennant et al., (2015) that found a significant

relationship between cyberbullying scores and depression scores for victims of cyberbullying. Research has also found that there is a significant risk of being a victim of cyberbullying and alcohol use for adolescent compared to the control group (Peleg-Oren, Cardenas, Comerford, & Galea, 2012).

Problems with previous research

Past research about cyberbullying can be contradictory. Where several studies found that there was a relationship between cyberbullying and depression (Feinstein et al., 2014; Na et al., 2015; Tennant et al., 2015; Schenk & Fremouw, 2012; Wright, 2016). However, Selkie, et al., (2015) looked at depression and alcohol use in students. They found that participants that reported being a cyberbully reported higher levels of depression and alcohol use. Participants that report being both a cyberbully and a victim reported higher levels of depression. However, they found that being a victim of cyberbullying did not significantly increase the risk of depression. Although, Selkie et al., (2015) only focused on female participants once. Whereas, Feinstein et al., (2014) and Wright (2016) carried out a repeated measure design following up with participants at a later stage and looking at both sexes. These two factors could significantly impact the finding in these two studies. Na et al., (2015) found that there was a relationship between cyberbullying and increased anxiety in victims. However, Pabian and Vandebosch (2016) found that there was no significant effect of being a victim of cyberbullying and anxiety. Although, they did find that having social anxiety increases the risk of becoming a victim of cyberbullying. Past research for alcohol use and being a victim of cyberbullying is limited. Peleg-Oren et al., (2012) found that cyberbullying predict alcohol use. Ybarra, Diener-West, and Leaf (2007) found that there was a significant relationship between cyberbullying and alcohol

use but also frequency of cyberbullying with higher levels of cyberbullying significantly related to higher levels of alcohol use. Although, their study only focuses on adolescents. However, Selkie et al., (2015) and Sánchez et al., (2016) both looked at university students and found that there was no significant evidence to support the relationship between alcohol use and cybervictimisation.

Rationale & Research Questions

Understanding the relationship between cyberbullying, depression, anxiety, and alcohol use is important. Due to the contradiction around cyberbullying research, cyberbullying prevention programmes have been less than effective. Researcher conducted a systematic review and meta-analysis looking at cyberbullying prevention and found 15 programmes that were mainly aimed at eleven to thirteen year olds. They found that there was only a modest effect for effective these programmes were (Van Cleemput, DeSmet, Vandebosch, & De Bourdeaudhuij, 2014). Therefore more research can inform better prevention programmes.

The first aim is to examine Depression, Anxiety, and Alcohol use in relation to cyberbullying in the same study. These three variables have not been explored in relation to cyberbullying in the same study before. Participants that reported cyberbullying also reported higher levels of depressive symptoms (Fahy et al., 2016), However, some researchers have found that there is no significant relationship between being a victim of cyberbullying increased risk of depression (Selkie et al., 2015). Therefore, *Do students that report higher levels of cyberbullying have more symptoms of depression?*

Past research for anxiety is contradictory with some research finding that there is a significant relationship between anxiety and being the victim of cyberbullying (Fahy et al., 2016;

Na et al., 2015; Wright, 2016). However, other researchers found that there is no significant relationship between anxiety and being a victim of cyberbullying (İçellioğlu & Özden, 2014). Therefore, *Do students that report higher levels of cyberbullying have more symptoms of anxiety?*

Researchers that have looked at the relationship between cyberbullying and alcohol use have found mixed results. Researchers have found that there was no significant relationship between increased alcohol use and being the victim of cyberbullying (Sánchez et al. 2016; Selkie et al., 2015). Although, researchers looking at adolescents (under 18) victims of cyberbullying found that there was a significant relationship with alcohol use (Peleg-Oren et al., 2012; Ybarra et al., 2007). Furthermore, researchers looking at traditional bullying found that victims had higher levels of alcohol consumption compared to non-victims (Quine, 1999). Therefore, Do students that report higher levels of cyberbullying have higher levels of alcohol use?

The second aim of this research is to explore whether there is a significant difference between victims of cyberbullying and a control group in relation to depression, anxiety, and alcohol use. Some research has found that when comparing victims of cyberbullying to a control group for depression (Feinstein et al., 2014), anxiety (Na et al., 2015; Wright, 2016) and alcohol use was found to be significantly higher. However, there is contradictory evidence for depression (Selkie et al., 2015), alcohol (Selkie et al., 2015; Sánchez et al., 2016) and anxiety (Pabian & Vandebosch, 2016). Therefore, *Do students that experience cyberbullying have higher scores for depressive symptoms, anxiety symptoms, and alcohol use compared to the control group?*

Methodology

Design

A mixed design was used, as the study used both between-subjects and within-subjects analysis. The four instruments were counterbalanced. The study consisted of four surveys measuring cybervictimisation, alcohol use, symptoms of depression, and symptoms of anxiety.

Participants

The participants all stated that they were students and were a volunteer self-selected sample. The participants (n=144) were aged between 18 to 52 years (M_{age} = 25, SD = 7.35) 89 (62%) females and 54 (38%) males. Participants undertook this research by completing four questionnaires on qualtrics. The participants were recruited through Twitter and Facebook as past research has suggested these are two of the largest platforms on the internet for cyberbullying (Craker & March, 2016; Kokkinos, Baltzidis, & Xynogala, 2016; Walker, Sockman, & Koehn, 2011).

Materials

Four questionnaires were used in the study (Appendix B). The ***Alcohol Use Disorders Identification Test*** (AUDIT; Babor, Higgins-Biddle, Saunders, & Monteiro, 2001) is a self-report questionnaire used to assess alcohol consumption and usage. It has ten questions, eight are on a five-point scale (item 1-8) and two are on a three-point scale (item 9-10). AUDIT has three questions (Items 1-3) that relate to consumption. Three questions relate to dependence (items 4-6) and four (items 7-10) that relate to harmful effects. One of the questions is for example

"How often do you have six or more drinks on one occasion?". The five response are *"Never"*, *"Less than Monthly"*, *"monthly"*, *"Weekly",* and *"Daily"* or *"almost daily"* (Babor et al., 2001). The scoring for AUDIT ranges from 0 to 40. For this study question two added an extra response *"Never"* to accommodate participants that did not consume alcohol. The total score remained the same. AUDIT has good internal consistency (α =0.81; De Meneses-Gaya, Zuardi, Loureiro, & Crippa, 2009). It is suggested that a cut-off score of 8 yielded the highest sensitivity (88%) and specificity (96%; Reid, Fiellin, & O'Connor, 1999).

The ***Generalized Anxiety Disorder 7*** (GAD-7; Spitzer, Kroenke, Williams & Löwe, 2006) is a self-report questionnaire that will be used to identify symptoms of anxiety. The participants answer the questions based on the past two weeks. GAD-7 consists of seven questions and uses a four-point scale. One of the questions is *"Feeling nervous, anxious or on edge"*, the responses are *"Not at all"*, *"Several days"*, *"More than half the days"*, and *"Nearly every day"* (Spitzer et al., 2006). GAD-7 cut-off range is 0 to 21 and the cut-off are >3 for mild, >7 for moderate and >12 for severe symptoms of anxiety. GAD-7 has good internal consistency (α =0.79–0.91) and a sensitivity of .89 and a specificity of .82 using a cut-off score of 10 (Williams, 2014).

The ***Patient Health Questionnaire 9*** (PHQ-9; Kroenke, Spitzer, & Williams, 1999) is a self-report questionnaire used to identify symptoms of depression. The participants answer based on the past two weeks. PHQ-9 consists of nine questions for example *"Little interest or pleasure in doing things"* with four response *"Not at all"*, *"Several days"*, *"More than half the days"*, and *"Nearly every day"* (Kroenke et al., 2001). PHQ-9 has two factors structures one for somatic (items 3, 4, 5, & 8) and one for affective/cognitive (items 1, 2, 6, 7, & 9; Rathore et al., 2014). The score for the PHQ-9 range from 0 to 27 and has cut-off scores of >5 for mild, >10 for

moderate and >15 for severe symptoms (Kocalevent, Hinz, & Brähler, 2013; Kroenke et al., 2001). The PHQ-9 has good internal consistency (α =.86-.89) with a specificity of .88 and a sensitivity of .88 using a cut-off score of 10 (Kroenke et al., 2001).

The ***Cyber-Victimization Questionnaire*** (CVQ; Widgerson & Lynch, 2013) is a self-report questionnaire that is used to identify the level of cyber-victimisation experienced by participants over the past nine months. The measure was originally adapted from Smith et al., (2008). CVQ assess six different types of cyber-victimisation; text messages, phone calls, emails, instant messages, personal information being reveal and picture or video-clips. The CVQ has six questions for example *"How often have you received inappropriate, threatening, or insulting instant messages during the past nine months?"* and the five response are *"Never"*, *"It has only happened once or twice"*, *"Two or three times a month"*, *"About once a week"*, and *"Several times a week"*. The CVQ score range from 0 to 24 using a five-point scale from 0= "Never" to 4= "Several times a week". Researchers found that internal consistency was α =.73 (Widgerson & Lynch, 2013).

Procedure

The brief was displayed first to the participants (Appendix A). This gave a brief explanation about the purpose of the research. The next section explained to the participant's their ethical rights. This included the participant's right to withdraw from the study at any time including after the study has concluded. All information collected was anonymous and confidential. The brief also stated that the data collected was stored on a password-protected computer and after the research has concluded the data was deleted. This page also gave

contact information so the participants could contact the researcher and ask any question about the research before starting. To ensure there was anonymity of all Email correspondence the participants were asked to enter a four-digit pin and for this to be used for any further correspondence. The final page asked the participants for consent to partake in the research. The next page asked the participants about their demographic (e.g., Sex, Age, Whether they were a student, and Whether they worked). Participants were asked to complete the four questionnaires (AUDIT, GAD-7, PHQ-9, & CVQ; Appendix B), these were randomised in no specific order. The participants were presented with the debrief page (Appendix C), again this reiterates the aims of the study, the participant's ethical rights, and how they can withdraw. As this topic area may have caused distress to the participants useful information and the name of several charities were given where participants could seek help if needed (Appendix D) and finally thanked them for their participation.

Results

Normality of data

One hundred and fifty-nine participants attempted the study. Ten participants were removed due to missing data. Four participants were removed due to being outliers on AUDIT (z scores of +3; Tabachnick & Fidell, 2007). There were no outliers for GAD-7 and PHQ-9. The data for CVQ was not normally distributed (Skewness = 2.3, Kurtosis = 6.3; Appendix E). Two participants did not include their age, although did complete the study and their data was included. One participant stated their age was seventeen and their data was removed. This left one hundred and forty-four participants that completed the study. The data were analysed using R (R Core Team, 2017).

Descriptive Statistics

A correlation and manova were conducted to examine the relationship between cybervictimisation, depression, anxiety, and alcohol use. Table one shows the means and standard deviation for each variable for both males and females. Seventy-four (51%) participants stated that they have been experienced cybervictimisation in the last nine months. Twenty-four (16%) participants stated that they have experienced cybervictimisation once or twice and 50 (35%) participants stated that they have been the victim of cyberbullying multiple times. For alcohol use 122 (84%) participants stated that they consumed alcohol in the past year with 29 (20%) participants scored above the cut-off of eight. For depression 139 (96%) participants stated that they have experienced symptoms of depression in the last two weeks and 71 (50%) participants scored above the cut-off of ten. For anxiety 136 (94%) participants

stated that they had experienced symptoms of anxiety in the past two weeks, with 56 (39%) scoring above the cut-off of ten on GAD-7. Table One shows the range for each variable and the Cronbach's alpha. All of the variables had good internal consistency as they were above .70 (Fields, 2013).

Table One: Means and Standard Deviations, range and Cronbach's Alpha for AUDIT, GAD-7, PHQ-9, & CVQ (n = 144).

	Means			Standard Deviations			Range	Alpha
Variable	Total	Male	Female	Total	Male	Female		
AUDIT	4.72	5.16	4.44	4.27	4.87	3.86	0 - 40	.82
GAD-7	8.77	9.60	8.27	6.06	6.22	5.95	0 - 21	.92
PHQ-9	11.01	12.49	10.10	7.55	7.52	7.47	0 - 27	.91
CVQ[a]	3.14	3.80	2.63	2.74	3.47	1.94	0 - 21	.78

Note: AUDIT - Alcohol Use Disorders Identification Test, GAD-7 - Generalized Anxiety Disorder 7, PHQ 9 - Patient Health Questionnaire 9, CVQ - Cyber-Victimization Questionnaire, & a - only for victims (n=74)

Spearman's correlation

As there are conflicting findings in past research (e.g., Selkie et al., 2015). A correlation was carried out to investigate the relationship between cybervictimisation scores, depression, anxiety, and alcohol use. Due to the cybervictimisation scores being skewed a spearman's correlation was used to investigate these four variables. Table Two shows the relationship between each variable. The results show that there was a significant relationship between cybervictimisation scores and depression scores $r_s(72)=.24$, $p=.03$. There is also a significant relationship between depression scores and anxiety scores $r_s(72)=.75$, $p<.001$. This suggests that there is a significant relationship between depression scores and anxiety scores. There was

no significant relationship found between cybervictimisation and symptoms of anxiety. There was also no significant relationship between cybervictimisation and alcohol use.

Table Two: Spearman's correlation for each variable in relation to each other (n=74)

Variable	CVQ	GAD-7	PHQ-9	AUDIT
CVQ	1			
GAD-7	.21	1		
PHQ-9	.24*	.77***	1	
AUDIT	.06	-0.03	-0.04	1

Note: *** p<.001, ** p<.01, & * p<.05, AUDIT - Alcohol Use Disorders Identification Test, GAD-7 - Generalized Anxiety Disorder 7, PHQ 9 - Patient Health Questionnaire 9, & CVQ - Cyber-Victimization Questionnaire

Comparison between victims and control group

A one-way manova was conducted to examine the differences between the victims (n=74) and the control group (n=70) for GAD-7, PHQ-9, and AUDIT. A dummy variable was used, victims coded as 1 and the control coded as 0. The cyberbullying dummy variable was used as the independent variable and scores on GAD-7, PHQ-9, and AUDIT was used as the dependent variable. This is based on a similar methodology used by Schenk and Fremouw (2012). Table three shows the means and standard deviation for the victims and control group. The model was significant $F(3, 140) = 4.02$, p<.001. The results show that GAD-7 scores were significantly different between the victims and the control group $F(1, 142) = 7.03$, p=.009, suggesting that victims of cyberbullying have significantly higher levels of anxiety compared to the control group. The scores for PHQ-9 were also significantly different $F(1, 142) = 11.45$, p<.001 between the victims and control group, suggesting that participants that were the victim of cyberbullying had significantly higher levels of depression compared to the control group. However, the

results show that the scores for AUDIT are non-significant, suggesting that there is no significant difference between the amount of alcohol used between victims and the control group.

Table Three: Comparison between the Means and standard deviation between the victims and the control group for each variable (*n*=144)

	Victims (n=74)		Control (n= 70)				
	Means	SD	Means	SD	*F*	*p*-value	*Partial* η^2
GAD-7	10.05	6.36	7.43	5.50	7.03	.009	.05
PHQ-9	13.01	7.36	8.95	7.25	11.45	*p*<.001	.07
AUDIT	5.00	4.68	4.43	3.83	0.67	.41	.003

Note: SD - standard deviation, AUDIT - Alcohol Use Disorders Identification Test, GAD-7 - Generalized Anxiety Disorder 7, PHQ 9 - Patient Health Questionnaire 9, & CVQ - Cyber-Victimization Questionnaire

A second manova was conducted to examine the differences between the three groups and to conduct post-hoc analysis to examine where the differences are. Participants were divided up into the three groups based on their scores on CVQ. A dummy variable was used, the control group (n=70) was coded as 0. The victims that scored one on CVQ were placed in the single group (n=24) and were coded as 1. The victims that scored two or more were placed in the multiple cyberbullying group (n=50) and were coded as 2. The second model was significant $F(6, 280) = 2.20$, $p=.04$. The results show that GAD-7 was significant $F(2, 141) = 3.65$, $p=.03$, suggesting that there is a significant difference between the three groups. PHQ-9 was also significant $F(2, 141) = 5.85$, $p=.004$, indicating that there is a significant difference between each group. However, there was no significant difference for alcohol use. Table Four shows the results of the Bonferroni corrected post-hoc analysis. This shows that there is a significant difference for anxiety ($p=.03$, 95% CI -5.56, -.22) between the control group and multiple

incidents of cyberbullying group. For depression, the results show that there is a significant difference (*p*=.004, 95% CI -7.72, -1.16) between the control group and multiple incidents of cyberbullying.

Table Four: Bonferroni Corrected Comparisons between control group and victim groups (n=144)

				95% Confidence Interval	
		Mean Difference	Std. Error	Lower Limit	Upper Limit
GAD-7	Control vs. Single	-2.07	1.41	-5.48	1.34
	Control vs. Multiple	-2.89*	1.10	-5.56	-.22
	Single vs. Multiple	-.82	1.48	-4.40	2.76
PHQ-9	Control vs. Single	-3.43	1.73	-7.62	. 76
	Control vs. Multiple	-4.44**	1.35	-7.72	-1.16
	Single vs. Multiple	-1.01	1.82	-5.40	3.39
AUDIT	Control vs. Single	.25	1.01	-2.20	2.70
	Control vs. Multiple	-.99	.79	-2.90	.93
	Single vs. Multiple	-1.23	1.06	-3.80	1.34

Note: * Bonferroni corrected p < 0.05, ** Bonferroni corrected p < 0.01, AUDIT - Alcohol Use Disorders Identification Test, GAD-7 - Generalized Anxiety Disorder 7, PHQ 9 - Patient Health Questionnaire 9, & CVQ - Cyber-Victimization Questionnaire.

Discussion

The purpose of this study was to investigate the relationship between cybervictimisation, symptoms of anxiety, symptoms of depression, and alcohol use in a student population. Whereas, past research has not examined these four variables before in the same study. The cybervictimisation prevalence rate was 51 percent with males scoring higher for cybervictimisation compared to females. Although, this may not mean that males are more at risk compared to females, as there is an association between time spent online and risk of cybervictimisation (Juvonen & Gross, 2008). Males spend more time online compared to females (Thanuskodi, 2013) and this may be the reason why males report higher levels of victimisation.

The first aim of this study was to examine each variable in the same correlation. The results from the correlation revealed that there was a significant relationship between cybervictimisation and depression. Participants that were the victim of cyberbullying did have more symptoms of depression. There was also a significant relationship between depression scores and anxiety scores. However, there was no significant relationship between symptoms of anxiety and cybervictimisation scores. The correlation also revealed that there was no significant relationship between alcohol use and cybervictimisation scores.

The second aim of this study was to examine symptoms of anxiety, symptoms of depression, and alcohol use between the victims of cyberbullying in comparison to the control group. The results showed that there is a significant difference between the scores for depression and anxiety between the victims and the control group. However, there was no

significant difference for alcohol use between victims and the control group. However, when looking at the difference between the control group and multiple incidents of cyberbullying there was a significant difference between anxiety and depression scores. This suggests that more cybervictimisation leads to higher levels depression and anxiety.

Depression

Past research has found a significant relationship between depression and cybervictimisation (Feinstein et al., 2014; Kokkinos et al., 2014; Landoll et al., 2013; Na et al., 2015; Schenk & Fremouw, 2012; Tennant et al., 2015; Wolford-Clevenger et al., 2016; Wright, 2016). The current study found that there was a relationship between cybervictimisation scores and depression scores. Past research has also found that when comparing victims and a control group there is a significant difference between the two (Schenk & Fremouw, 2012), this was also found in the present study for depression. This research also contradicted past research that did not find any significant relationship between depression and cybervictimisation (e.g., Selkie et al., 2015). Although, a possible reason why Selkie et al., (2015) did not find a significant result was that their research only used female participants. Whereas, in the current study both male and female participants were used. Also, male participants in the current study had a higher mean score for depression and cybervictimisation compared to the female participants. Suggesting that cybervictimisation may have more of an impact on males compared to females.

Anxiety

Past research has found that there is a significant relationship between anxiety and cybervictimisation (Fahy et al., 2016; Na et al., 2015; Wright, 2016). However, the current study did not find a significant relationship between cybervictimisation scores and anxiety scores.

Although, this does support what other research has found (İçellioğlu & Özden, 2014; Pabian & Vandebosch, 2016). Dempsey, Sulkowski, Nichols, and Storch (2009) found a significant relationship between social anxiety and cybervictimisation in student under the age of 16. This may suggest that cybervictimisation may have less of an effect on young adults compared to adolescents. However, when comparing mean scores between victims and the control group there is a significant difference. This supports past research (e.g., Schenk & Fremouw, 2012) and suggests that although there is no relationship between cybervictimisation scores and anxiety scores. Victims of cyberbullying have higher levels of anxiety compared to a control group.

Alcohol use

The findings from past research have found that there was a significant relationship between cybervictimisation and alcohol use (Peleg-Oren et al., 2012; Ybarra et al., 2007). The current study found that there was no significant relationship between cybervictimisation and alcohol scores. This supports what Selkie et al., (2015) and Sánchez et al., (2016) found that there was no significant relationship between alcohol use and cybervictimisation. Furthermore, the current study also found that there is no significant difference between victims and the control group. This suggests that the effects of being a victim of cyberbullying does not have a significant impact on alcohol uses in the student population. But this may also suggest that alcohol use is just a significant part of student's life and any effect of cyberbullying is nullified by the amount of alcohol consumed as a student in general (Selkie et al., 2015). For example, Heather et al., (2011) looked at alcohol use in 3075 students and found that 65 percent scored eight or more on AUDIT and 40 percent were classified as dangerous drinker.

There is much disagreement about whether repeated victimisation is necessary for cyberbullying to take place. Bauman et al., (2012) argue that a single incidence should be classified as cyber-aggression and not cyberbullying. Whereas, Privitera and Campbell (2009) argue that repeated victimisation is not necessary for cyberbullying to take place. It was found in the current study that there was no significant differences for anxiety, depression, and alcohol use between the control group and participants that report a one-off incidents (e.g., cyber-aggression). However, there was a significant difference for depression and anxiety between the control group and participants that reported multiple incidents of cyberbullying. This suggests that victims of cyber-aggression do not significantly have higher levels of anxiety, depression, and/or alcohol use compared to the control group. However, victims that reported cyberbullying do have significantly higher levels of anxiety and depression compared to the control group. Although, the severity of the attack on the participants was not explored and one incident in the single group may have had a significant long-lasting psychological impact on the victim (e.g., Besag, 1989).

Limitation

This study did not take into account whether participants had been the victim of traditional bullying. Researchers have found that there is a significant relationship between traditional bullying and cyberbullying (Sánchez et al., 2016) and that both bullying and cyberbullying are significantly linked (Thomas, Connor, & Scott, 2015). However, other researchers have argued that the behaviours displayed between traditional bullying and cyberbullying are distinctly different (Kowalski, Giumetti, Schroeder, & Lattanner, 2014) and

factors such as anonymity of the perpetrator while online and access to the victim play an important role (Kowalski et al., 2014).

The finding from the current study should be interpreted with caution. As cybervictimisation may not be the cause of the increased levels of depression or anxiety. Considering that there was no relationship between anxiety scores and cybervictimisation scores. It is difficult to suggest that victims have higher levels of anxiety and depression as a result of cybervictimisation (Schenk & Fremouw, 2012). But it may be other factors contributing or causing these mental health problems. Researchers looking at undergraduate students found that multiple factors (for example academic performance, need to succeed, & plans after graduating) significantly influenced students levels of depression, anxiety, and stress (Beiter et al., 2015). Researchers looking at first-year undergraduates found that students that had issues with their finances and money had higher levels of anxiety, depression, stress, and alcohol use (Richardson, Elliott, Roberts, & Jansen, 2017). Therefore, cybervictimisation may be just one factor that contributes to many underlying issues that students face while attending university. However, universities and health care professional could explore cybervictimisation as a possible underlying contributing factor when helping students with mental health related problems (Espelage & Hong, 2017; Nixon, 2014).

Future research

Future research could focus cybervictimisation in the workplace. Past research has mainly focused on students with very little focusing on cybervictimisation in the workplace (D'cruz & Noronha, 2013; Keskin, Akgün, Ayar, & Kayman, 2016). Unfortunately, this area is vastly under-researched, with only a few studies looking at cybervictimisation in an adult

non-student sample (Aboujaoude, Savage, Starcevic, & Salame, 2015; West et al., 2014). Research looking at cybervictimisation in the workplace is limited and with technology becoming a significant part of the workplace (Holland & Bardoel, 2016) studying this area is important to understand its effects.

In summary, finding from the current study found that there was a significant difference for anxiety and depression between students that reported cybervictimisation and a control group. Students that report multiple incidences of cyberbullying was associated with higher levels of depression and anxiety compared to the control group. However, it is difficult to suggest that symptoms of anxiety and depression are a direct result of cyberbullying. Cyberbullying maybe just one of many underlying issues (e.g., Beiter et al., 2015; Jones et al., 2014) that exacerbate the risk of mental health problem in students. Only with more research studying the long term effects of cyberbullying on university students and young adults will the picture become clearer.

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Appendix A

Department of Psychology Brief and Consent Form

PLEASE READ THIS FORM CAREFULLY, YOU NEED TO BE 18 AND OVER TO GIVE YOUR CONSENT TO TAKE PART IN THIS RESEARCH.

Hello, my name is James and I am interested in studying cyberbullying and whether certain factors increase the risk of becoming a victim.

The purpose of the study: Is to investigate whether symptoms of depression, symptoms of anxiety and alcohol use increase the risk of becoming a victim of cyberbullying.

Method of research: If you agree to take part in this study, you will be asked to complete four short online questionnaires that include questions about your feelings, alcohol use and online activity. There will also be basic demographic questions (e.g., age, sex). This study should take between 5 to 15 minutes to complete.

Voluntary Nature of the Study: Your participation in this study is entirely voluntary. You are under no obligation to take part and have the right to withdraw from the research at any time, you can do this by exiting the browser at any point or by contacting myself (James.Weller@study.beds.ac.uk) or my supervisor (Melanie.Pitchford@beds.ac.uk). You can remove your data from the study at any time, even after you have finished the study.

Confidentiality: All of your responses will be confidential and anonymous. This means that no identifying data can be linked back to you. All your data will be stored electronically on a password protected computer and will be destroyed after the study has finished.

To ensure you do not reveal your identity, a four digit pin number will need to be selected. This MUST be included in any e-mails sent to me or my supervisor. Please choose a Four-digit PIN number that is easy to remember.

If you have any questions please do not hesitate to contact me or my supervisor on the e-mail addresses below.

Researcher: James Weller (James.Weller@Study.Beds.ac.uk)
Supervisor: Dr Melanie Pitchford (Melanie.Pitchford@beds.ac.uk)

By checking the YES boxes below and pressing the forward button you are consenting to participate in the research, this does not affect your ethical rights.

Appendix B

Questionnaires used in the study

AUDIT

The Alcohol Use Disorders Identification Test: Self-Report Version

PATIENT: Because alcohol use can affect your health and can interfere with certain medications and treatments, it is important that we ask some questions about your use of alcohol. Your answers will remain confidential so please be honest. Place an X in one box that best describes your answer to each question.

	Questions	0	1	2	3	4	
1.	How often do you have a drink containing alcohol?	Never	Monthly or less	2-4 times a month	2-3 times a week	4 or more times a week	
2.	How many drinks containing alcohol do you have on a typical day when you are drinking?	0 / 1 or 2	3 or 4	3 or 4	7 to 9	10 or more	
3.	How often do you have six or more drinks on one occasion?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
4.	How often during the last year have you found that you were not able to stop drinking once you had started?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
5.	How often during the last year have you failed to do what was normally expected of you because of drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
6.	How often during the last year have you needed a first drink have you needed a first drink going after a heavy drinking session?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	

7.	How often during the last year have you had a feeling of guilt or remorse after drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
8.	How often during the last year have you been unable to remember what happened the night before because of your drinking?	Never	Less than monthly	Monthly	Weekly	Daily or almost daily	
9.	Have you or someone else been injured because of your drinking?	No		Yes, but not in the last year		Yes, during the last year	
10.	Has a relative, friend, doctor, or other health care worker been concerned about your drinking or suggested you cut down?	No		Yes, but not in the last year		Yes, during the last year	
						TOTAL	

GAD-7

Over the last 2 weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
1 Feeling nervous, anxious or on edge	0	1	2	3
2 Not being able to stop or control worrying	0	1	2	3
3 Worrying too much about different things	0	1	2	3
4 Trouble relaxing	0	1	2	3
5 Being so restless that it is hard to sit still	0	1	2	3
6 Becoming easily annoyed or irritable	0	1	2	3
7 Feeling afraid as if something awful might happen	0	1	2	3
	A12 – GAD7 total score			

PHQ- 9

	Over the last 2 weeks, how often have you been bothered by any of the following problems?	Not at all	Several days	More than half the days	Nearly every day
1	Little interest or pleasure in doing things	0	1	2	3
2	Feeling down, depressed, or hopeless	0	1	2	3
3	Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4	Feeling tired or having little energy	0	1	2	3
5	Poor appetite or overeating	0	1	2	3
6	Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7	Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8	Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9	Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3
		A11 – PHQ9 total score			

Cyber-Victimization Questionnaire

Items

1. How often have you received mean or offensive text messages in the past nine months?

☐ Never.

☐ It has only happened once or twice.

☐ Two or three times a month.

☐ About once a week.

☐ Several times a week.

2. How often have you received mean, inappropriate, or silent phone calls in the past nine months?

3. How often have you been sent abusive, threatening, or insulting emails during the past nine months?

4. How often have you received inappropriate, threatening, or insulting instant messages during the past nine months?

5. How often have other people revealed personal or insulting information about you on websites during the past nine months?

6. How often have you had insulting or inappropriate picture or video-clips of yourself sent to others or posted online in the past nine months?

Appendix C

Debrief

Department of Psychology Debrief Form

PLEASE REMEMBER TO PRESS THE SUBMIT BUTTON AT THE BOTTOM OF THE PAGE

The study that you have just completed looks at whether symptoms of depression, symptoms of anxiety and alcohol use could be used to predict the risk of becoming a victim of cyberbullying.

I would like to remind you of your rights as a participant. All of your responses are completely confidential and anonymous. You have the right to withdraw from the study at any time. All of your data contains no identifying personal information and will be destroyed when the research has concluded.

If in the future you change your mind and would not like to participate in the research then please email me or my supervisor on one of the e-mail addresses provided. Ensuring you include your four digit identification number, so your data can be removed. If you would like to know the overall results from the research then these can also be sent to you via e-mail. If you have any further questions then please contact me or my supervisor.

Researcher: James Weller (James.Weller@study.beds.ac.uk)

Supervisor: Dr Melanie Pitchford (Melanie.Pitchford@beds.ac.uk)

If after completing this research, you feel the need to talk to someone about cyber bullying, bullying or any other issue mentioned then these websites and organisations may be useful (students of the University of Bedfordshire may use the university's free counselling service).

Appendix D

The Student Counselling Service The Campus Centre University Square Luton LU1 3JU 01582 489338 Email: counselling@beds.ac.uk	University of Bedfordshire
Ditch the Label 15-17 Middle Street Brighton BN1 1AL http://www.ditchthelabel.org/ +44 (1273) 201129	DITCH THE LABEL YOUR WORLD. PREJUDICE FREE.
The Cybersmile Foundation Studio 5 2-18 Warburton Rd London E8 3FN https://www.cybersmile.org/ Help@Cybersmile.org	
Mind 15-19 Broadway Stratford London E15 4BQ 0300 123 3393 http://www.mind.org.uk/ info@mind.org.uk	mind for better mental health
Adfam 25 Corsham Street London N1 6DR 020 7553 7640 www.adfam.org.uk admin@adfam.org.uk	Adfam Families, drugs and alcohol

Appendix E

Histogram Plot for the Cyber-Victimization Questionnaire (*n*=74)