Does being a victim of cyberbullying increase the risk of Alcohol abuse, Depression, and Anxiety in an adult population?

Introduction

Cyberbullying is now a major public health problem (Aboujaoude, Savage, Starcevic, & Salame, 2015) that is linked with the use of technology. Many young adults have grown-up with technology and the internet (Wright, 2016). Smart phones and computers are a significant part of an individual's life (Aricak & Ozbay, 2016). Research suggests that 90 percent of young adults (18-29 years old) in the United States use the internet once a day (Perrin, 2015). In the UK, Ofcom (2017) interviewed 3743 adults and found that on average they spent 22.9 hours a week on the internet. However, with this increase in the use of technology the risk of abuse (Slonje, Smith, & Frisén, 2013) and cyberbullying becomes more problematic (Li, 2007).

Defining Cyberbullying

There is no agreed upon definition for cyberbullying (Kota, Schoohs, Benson, & Moreno, 2014) or behaviours that are classified as cyberbullying (Zych, Ortega-Ruiz, & Marín-López, 2016). DeHue, Bolman, and Völlink (2008) suggested there must be three features for cyberbullying to take place; 1) The act must be intentional, 2) repeated, and 3) cause psychological distress. One definition that is used to defined cyberbullying is: A repeated intentional act of aggression that is conducted by an individual or a group against a victim using electronic media (Kota, Schoohs, Benson, & Moreno, 2014; Smith et al., 2008). Therefore, the prevalence of cyberbullying can dramatically change based on the definition that is used in the research. This may inflate or

marginalise the prevalence of cyberbullying depending on whether the act is carried out once or multiple times. However, the issue is that many of these definitions are taken from traditional bullying. Whereas, these behaviours that apply to bullying may not apply in the context on the internet. For example, many researchers argue that there needs to be a power imbalance between the perpetrator and the victim (Menesini, Fonzi, & Smith, 2002), similar to what is seen in traditional bullying (e.g., Olweus, 1994). Although, others have argued that this is not necessary as the behaviour is carried out online and not in person (Schenk & Fremouw, 2012). Researchers stated that repeated contact is not necessary for cyberbullying to take place (Privitera & Campbell, 2009; Raskauskas & Stoltz, 2007; Slonje & Smith, 2008). Other researchers have also argued that repeated victimisation is not needed if one incident has a lasting effect on a victim (Besag, 1989).

However, Bauman, Underwood, and Card (2012) argue that many studies do not clearly define cyberbullying in their research. They argue that repetition is necessary for cyberbullying to take place and a one off acts can not be classified as cyberbullying but should be classified as cyber-aggression. Where cyber-aggression is any negative act (e.g ‘happy slapping’, ‘flaming’, ‘cyberstalking’, ‘Trolling’, & etc) that is carried out using electronic media against another person regardless of repetition and power imbalance (Grigg, 2010). Therefore, cyber-aggression can become cyberbullying if the act is repeated by the same perpetrator(s) against the same victim. This is an issue that other researchers have highlighted as well. As Kowalski, Giumetti, Schroeder, and Lattanner (2014) highlighted

in their review many studies only use a single item to determine cyberbullying prevalence rather than frequency of victimisation.

Impact of Cyberbullying

Consequences of cyberbullying in adolescents have been documented by many researchers (Bottino et al., 2015; Kowalski, Giumetti, Schroeder, & Lattanner, 2014). The effects of cyberbullying can have substantial effects on victims and their physical and mental health (Kowalski & Limber, 2013; Selkie, Fales, & Moreno, 2016). Adolescent victims of cyberbullying have reported lower levels of self-esteem and higher levels of depression (Slonje & Smith, 2008). Researchers have also found that online victimisation can significantly impact on offline behaviours increasing the risk of school violence and delinquency (Hinduja & Patchin, 2007). Victims of cyberbullying also have been found to have poorer academic performance and a higher risk of dropping out of school (Willard, 2006).

Literature review

The vast majority of research on cyberbullying focuses on adolescents and children (Privitera & Campbell, 2009; Tennant, Demaray, Coyle, & Malecki, 2015; West et al., 2014; Wright, 2016). However, cyberbullying does not stop after finishing school and can often continue at university (Johnson et al., 2016) or start at university (Kowalski, Giumetti, Schroeder, & Reese, 2012) and in the workplace (Gardner et al., 2016; Privitera & Campbell, 2009). Estimates for how common

cyberbullying is vary between studies. One systematic review found that the prevalence of cyberbullying was between 20 to 40 percent (Tokunaga, 2010). While other research has suggested that 55 percent of university students have been cyberbullied at least once (Dilmac, 2009). Selkie, Fales, and Moreno (2016) looked at the prevalence of cyberbullying in adolescence. They looked at 58 studies (10 to 19-year-olds). They found that the prevalence for victimisation across the studies was between 3 to 72 percent. In another systematic review Zych et al., (2016) looked cyberbullying research in Spain. They found 21 Spanish studies that looked at this issue. They found that there were issues with prevalence depending on what type of questionnaire used. When using a multi-item questionnaire the prevalence for cyberbullying was twice as high compared to a single item questionnaire (Zych et al., 2016).

Kowalski et al., (2014) conducted a systematic review and meta-analysis looking at 131 studies, and they looked at 51 different factors that affected cyberbullying both for perpetration and victim. They found 30 studies (55,929 participants) that looked at depression, 14 studies (7,450 participants) that looked at anxiety and 6 studies (5,975 participants) that looked at Drug and alcohol use. They found that victims of cyberbullying reported higher levels of depression (r = .24), anxiety (r = .24), and drug and alcohol use (r = .15). Goebert et al., (2011) also explored this link between alcohol use and bullying in adolescence. They found that alcohol use in victims increased depending on the grade (10th OR=.99, 11th OR = 1.02, & 12th OR=2.64). Suggesting that as adolescents get older alcohol becomes more freely available and is used

as a coping mechanism for victims of bullying. Bottino et al., (2015) conducted a systematic review of cyberbullying and mental health on adolescence (ages between 10 to 17). They found ten studies that focused on the perpetrator and/or victims. They found that cyberbullying is a significant issue, suggesting that the prevalence is between 6.5 and 35.4 percent. It was also found that individual that were affected by cyberbullying had an increased risk of mental health problems, substance misuse, and suicide. Factors that increase the risk was being a victim of traditional bullying and spending three or more hours a day on the internet.

Problems with Literature

These reviews signify that there is a significant problem with cyberbullying, mental health, and alcohol use. Kowalski et al., (2014) looked at depression, anxiety, and alcohol use. However, they looked at both adolescents and adults together and any results from the study would be a broad overview of the literature as opposed to a detailed analysis of how different age groups react to being the victim of cyberbullying. Although, Bottino et al., (2015) review focuses on adolescents which reveals that there is a significant issue. However, as this review only focused on adolescents and it would be reasonable to assume that children, adolescents, and adults would all respond or experience cyberbullying in different ways. With a lack of research into adults, this negates the risk of cyberbullying still being considered an issue past the age of eighteen and further on into adulthood (e.g Gardner

et al., 2016; Kowalski, Giumetti, Schroeder, & Reese, 2012; Johnson et al., 2016; Privitera & Campbell, 2009). There have been no systematic reviews of cyberbullying, mental health, and alcohol use for adults.

Aims and Research Question

The purpose of this research is to understand the effect that cyberbullying has on an adult sample. Whereas, the only past systematic review (e.g., Bottino et al., 2015) that looks at mental health outcomes only focus on adolescents under the age of eighteen (10-17). A review of the current literature focusing on research that looks at adult (18+) participants to establish what effect cyberbullying has on an adult population. A past review found that victims of cyberbullying have higher levels of depression (e.g., Kowalski et al., 2014). However, this combined both adolescents and adults. Bottino et al., (2015) found that adolescents victims of cyberbullying have higher levels of depression but is this also the case for an adult sample or do adults react differently to adolescents. Therefore, *Does being a victim of cyberbullying increase the risk of depression in an adult sample?*

Past research has found that victims of cyberbullying have higher levels of anxiety (e.g., Kowalski et al., 2014). However, as with depression, this study combined both adolescents and adults. Whereas, Bottino et al., (2015) only looked at adolescent victims of cyberbullying and found evidences to suggest that there is a link between being a victim of cyberbullying and having increased levels of Anxiety in adolescence but is

there a similar effect in an adult population. Therefore, *Does being a victim of cyberbullying increase the risk of anxiety in an adult sample?*

Past research has found a link between alcohol use and cyberbullying (e.g., Goebert et al., 2011; Kowalski et al., 2014). However, Kowalski et al., (2014) review combined both drugs and alcohol use and was conducted across age groups. Also, due to the fact that most of the past systematic review and research has focused on adolescents and children the use of alcohol has been less explored compared to mental health problems. However, as Goebert et al., (2011) found looking at adolescence, alcohol consumption increased in the older adolescents compared to their younger peers. Furthermore, as alcohol is more freely available to an adult population, does alcohol have a significant role in cyberbullying. Therefore, *Does being a victim of cyberbullying increase the risk of alcohol use in an adult sample?*

Method

To investigate the research questions posed a number of searches using inclusion and exclusion criteria were conducted on a number of different databases.

Eligibility Criteria

Firstly, for inclusion criteria studies in the search must adhere to the following; the participants in the study must be **eighteen or over**. As the majority of research had already been conducted on children and adolescents (Privitera & Campbell, 2009; Tennant, Demaray, Coyle, & Malecki, 2015; West et al., 2014; Wright, 2016) There were already several systematic reviews and meta-analysis that either looked at all ages in terms of outcome for cyberbullying (Kowalski et al., 2014) or adolescents (Bottino et al., 2015). The age of the participants was determined by either the age range provided in the study or if this was not provided then the mean age was used. Studies were included if the study was primary research and the researcher collected and analysed the data. All the studies must be **Published research** and **Peer-reviewed**. Studies also had to include elements that answered the research questions. For the independent variables, the studies must include **cyberbullying** and/or **Cyber-Victimisation**. For the dependant variable studies must include either or a combination of **Depression**, **Anxiety** and/or **Alcohol use**.

Secondly, for exclusion criteria, studies were rejected if they met any of the following criteria. If the study was **Qualitative research** as

this meant that extrapolating effect size or correlative data from the study was not possible. If the studies was a **Review article** and no primary research was carried out. The study was a **dissertation** or was carried out as part of a course as this may lack the peer-review element that other research adheres to. Studies were also excluded if the research was a **Case study** or only had a small number of participants. Also, **Meta-analysis** and **Systematic review** were also excluded partly as these are not primary research but also there may be bias in the studies selected or in their inclusion and exclusion criteria.

Sample of Studies

The primary search took place between February 2017 and March 2017. This search was repeated in July 2017. The following databases were searched *Medline, Medline Full Text, Psycinfo, SocINDEX, PsycARTICLES* and *Google Scholar Search.* Multiple search terms were used ((Cyberbullying Or Cybervictimisation) AND (Depression Or Anxiety Or Alcohol)) Each of the Cyberbullying Keywords was searched alongside the mental health and alcohol use keywords.

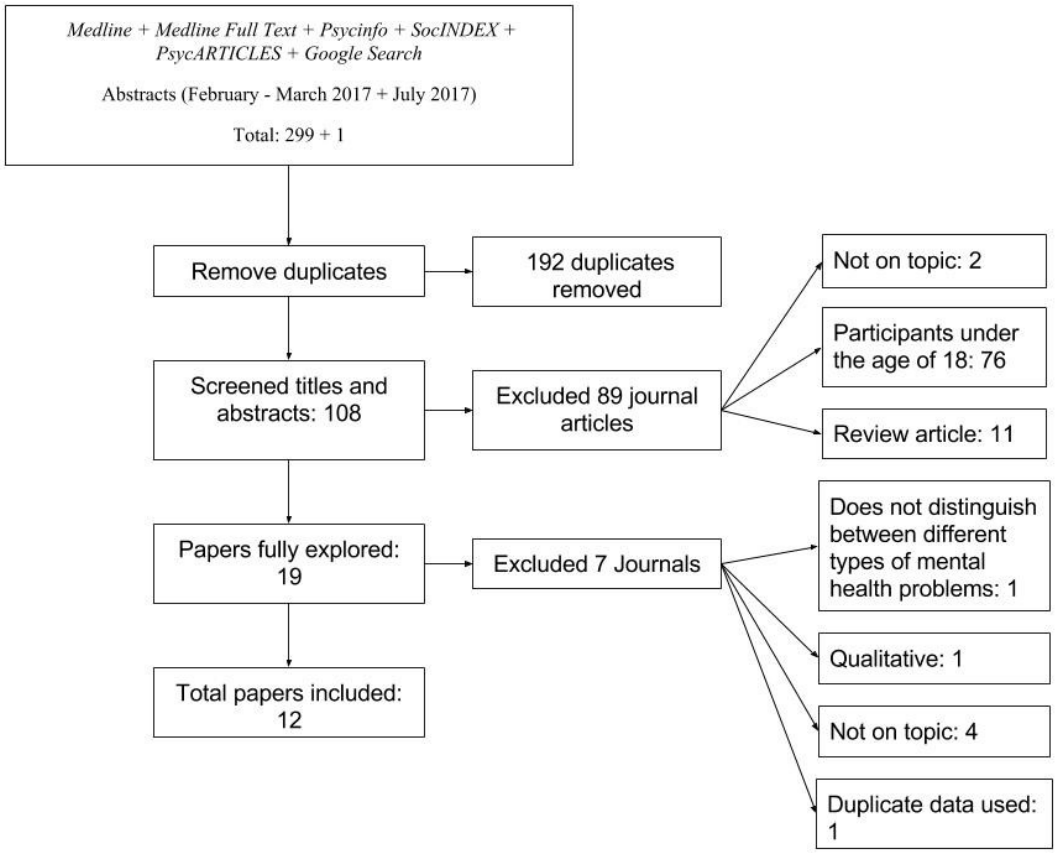

Figure 1: Flow diagram of the search process

Results

The search produced 428 journal articles. The following restrictors were applied when the option was available **Full Text**, **Peer Reviewed**, **English Language** and **Remove Dissertation**. This reduced the number of studies down to 299 journal articles and 192 duplicate were removed (see Figure 1). Eighty-nine journals articles were removed, 75 due to the participant being under the age of 18, 11 were review articles and two were not on topic. One-hundred and eight journal articles were screened by title and abstract. This produced 19 journal articles that were fully explored. Seven journal articles were excluded based on fully reading and exploring the content. All seven studies excluded after fully reading did have a sample over the age of eighteen and did investigate cyberbullying to some extent. However, Kota et al., (2014) were excluded due to the study using Focus groups. Orel et al., (2017) was excluded as it did not include any elements related to mental health and/or alcohol use as its primary focus. Wozencroft et al., (2015) study was excluded as it did not focus on mental health and/or alcohol use. Elipe, Mora-Merchán, Ortega-Ruiz, and Casas (2015) was excluded as its focus was on emotional intelligence and cyber-victimisation as a moderator on the emotional impact and did not directly explore mental health and/or alcohol use. Schenk, Fremouw, and Keelan (2013) was excluded for two reasons, firstly; this study used the same data as Schenk and Fremouw (2012) which was included in the review. Secondly; Schenk et al., (2013) does not use separate groups for cyberbullies and victims and combines both into the same group. The 11 studies that met the inclusion criteria are

displayed, one further articles was identified in the repeated search. Table One displays the 12 articles included and the characteristics of each study. All studies are highlighted in the reference list with an asterisk.

Table 1 - Characteristics of studies

Study	Article, Year	Country	Participants	Study Design	Cyberbullying Repeated Event (Number of Items)	Measures	
						Cyberbullying	Outcome Measure
1	Feinstein et al., 2014	USA	N = 620 M_{age} = 19.55 Male = 35.3% Female = 64.7%	online survey	No (4 items)	• Internet Harassment Experiences questionnaire	• Depression, Anxiety, and Stress Scales-21 • 22-item Ruminative Responses Scale
2	Kokkinos et al., 2014	Greece	N = 430 M_{age} = 20.3 Male = 42.1% Female = 56.7%	self-report questionnaire	Yes (24 items)	• Cyber-bullying/Victimization Experiences Questionnaire	• Eight Question Empathy scale • Brief Sensation Seeking Scale-8 • Patient Health Questionnaire -9
3	Kritsotakis et al., 2017	Greece	N = 812 M_{age} = 19.3 Male = 33.9% Female = 66.1%	self-report questionnaire	Yes (7 items)	• Cyberbullying question taken from Hickey and Kramer (2012) and adapted questions from Olweus (1996)	• Smoking • Alcohol abuse • Illegal drug use • Condom use • Pay for intercourse
4	Landoll et al., 2013	USA	N = 108 M_{age} = 19.06 Male = 37% Female = 63%	Survey	Yes (12 items)	• Social Networking-Peer Experiences Questionnaire • Revised Peer Experiences Questionnaire	• Social Anxiety Scale for Adolescents • Center for Epidemiological Studies – Depression Scale
5	Na et al., 2015	USA	N = 121 M_{age} = 19.68 Male = 38% Female = 62%	survey	Yes (9 items)	• Cyberbullying Victimization Scale • Stress Appraisal Measure for Adolescents	• Self-Report Coping Scale • Depression, Anxiety, and Stress Scales-21 • Rosenberg Self-Esteem Scale;
6	Sánchezet	Spain	N = 543	Survey	Yes	• Cyber-teasing (Adapted from	• Alcohol use

	al., 2016		M_{age} = 22.6 Male = 138 N = 405		(1 item)	Olweus Bullying Questionnaire)	• "Have you consumed alcohol during the last year?"
7	Schenk & Fremouw, 2012	USA	N = 799 M_{age} = 20 Male = 28.4% Female = 71.6%	Online Survey	Yes (47 items)	• Internet Experiences Questionnaire (IEQ)	• Symptom Checklist-90 Revised (SCL-90-R) • Suicidal Behaviors Questionnaire-Revised (SBQ-R)
8	Selkie et al., 2015	USA	N = 265 M_{age} = 20.2 Female = 100% Victims = 45	Online Surveys	No (11 items)	• Questions written for study by the authors.)Have you ever witnessed, experienced, or partici- pated in cyberbullying in college?)	• Patient Health Questionnaire-9 • Alcohol Use Disorder Identification Test (AUDIT)
9	Tennant et al., 2015	USA	N = 267 M_{age} = 19.18 Male = 43% Female = 57%	Survey	Yes (15 items)	• Revised Olweus Bully/Victim Questionnaire • Cyberbullying and victimization survey	• Behavior assessment scale for children, second edition college version • Child and adolescent social support scale – college version
10	Tomşa et al., 2013	Romania	N = 92	survey	No	• Self-reported cybervictimization	• DASS-21
11	Wolford-Clevenger et al., 2016	USA	N = 502 M_{age} = 18.80 Male = 34.3 Female = 65.7%	Online Survey	Yes (9 Items)	• Partner Cyber Abuse Questionnaire (PCAQ)	• Revised Conflict Tactics Scales (CTS2) • Center for Epidemiologic Studies-Depression Scale (CES-D)
12	Wright, 2016	USA	N = 1483 M_{age} = 24.67 Male = 40% Female = 60%	questionnaire and interview	Yes (10 items)	• Self-reported cyber victimization	• Beck Depression Inventory • Beck Anxiety Inventory

Studies Characteristics

The primary focus of the studies (*k*=12) included focused on cyberbullying. The studies also had a second aim focusing on Depression (*k*=9), Anxiety (*k*=6), and Alcohol use (*k*=3) or a combination of two (*k*=7). None of the study included had all three variable in their research. The sample size ranged from 92 participants [study 10] to 1483 participants [study 12]. A total sample (*n*= 6042, *m* = 504, SD = 399) included in the systematic review. Many studies divided the participants up into subgroups (e.g., cyber-bullies, victims, & control). When looking at only the victims the total number of participants decrease (*n*=3118, *m*=260, SD=407). Some studies had control groups [studies 1, 2, 3, 6, 7, & 8]. Whereas, other studies did not [studies 4, 5, 9, 10, 11, & 12]. The mean age of participants (m_{age} = 20.30, SD = 1.77), this does not include Tomşa et al., (2013) as this data is not reported.

Studies Quality

Table Two describes the main findings of the studies. The prevalence for cyberbullying was between 7.5 to 100 percent (*m* = 41.14, SD =35.17). Although, one studies report that all participants had been victimised [studies 5] and another did not report victimisation rates in the sample [studies 12]. When excluding these two studies [studies 5 & 12] the prevalence rate decreases (*m* = 29.37, SD =24.24). Some studies did not use validated tools for assessing cyberbullying [studies 1, 8, & 10], choosing instead to write their own questionnaire or using a single question to investigate the problem. Whereby, researchers only allowed

for dichotomous or trichotomous responses (e.g *‘‘Have you ever witnessed, experienced, or participated in cyberbullying in college?’’* ‘Yes’, ‘No’, & ‘Don’t know’; study 8) and did not take into account whether it only happens the once or multiple times. Thus, not investigation cyberbullying but instead investigating cyber-aggression (e.g., Bauman et al., 2012). However, many studies [Except studies 1 & 10] did explore cyberbullying allowing the participants to state how often they have been the victim of cyberbullying.

Table 2 - Cyberbullying prevalence, means, standard deviation, and mental health problems.

Study Number	Authors	Prevalence	Aims	Mean (SD)		Results Given	Limitation
				Victim	Control		
1	Feinstein et al., 2014	31.2%	To examine the relationship between cyber- victimisation, depression and rumination between two time points.	Depression *n* = 193 T1 8.32 (9.00) T2 9.43 (8.75)	Depression *n* = 427 T1 6.56 (8.44) T2 7.05 (8.57)	T1 *t*=-2.25, *p*<.05 T2 *t*=-3.04, *p*<.01 Depressive symptoms (T1) *b*=.66, *t*=21.07, *p*<.001 Cyber-victimization (T1) *b* =.06, *t*= 2.05, *p*<.05	Only looked at dichotomous variables for cyberbullying (Yes and No) to determine prevalence. Therefore, they may not have been studying cyberbullying.
2	Kokkinos et al., 2014	11%	To investigate the psychological profiles of cyberbullies and cyberbullying victims in rational to different factors e.g. anxiety, Depression, Psychopathic traits, Sensation seeking & etc	Depression *n* = 27 0.72 (0.35) Anxiety *n* = 27 1.19 (0.57)	Depression *n* = 72 0.63 (0.53) Anxiety *n* = 72 1.07 (0.66)	Depression *r* = .41; *p*<.01 Anxiety *r* = .22; *p*<.01 Gender/Depressive symptoms β =.25 Gender/Anxiety β =.02	As this study divided the participants into subgroups depending on victim, bully, bully/victim. The number of participants per group is very small. Possibly limiting how reliable the analysis is.
3	Kritsotakis et al., 2017	35%	To investigate past and current association of bullying and cyberbullying in relationship to Smoking, Alcohol abuse, Illegal drug use, and risky sexual behaviour.	Not reported	Not Reported	Alcohol use (30 days) Male OR 0.89 [95% CI 0.46–1.72] Female OR 1.28 [95% CI 0.82–2.01] Alcohol use (lifetime) Male OR 0.72 [95% CI 0.37–1.40] Female	No means and standard deviation are reported. Only looks at greek undergraduate students

						OR 0.98 [95% CI 0.62–1.56]	
4	Landoll et al., 2013	82%	To examine the role of social networking sites in relation to cybervictimisation and its role in depression and anxiety symptoms in both adolescent and adult samples.	Not reported	no control group	Depression β =.40, p<.01 Anxiety β =.37, p<.05	No means and standard deviation are reported, no control group. Limited generalisability as the participants were psychology students
5	Na et al., 2015	100%	To study whether cyberbullying, cognitive appraisal and coping strategies were related to psychological adjustment among students.	Depression 12.74 (11.04) Anxiety 12.68 (9.82)	no control group	Depression r = .23; p<.05 F[6,103] = 7.33, p< .000 Anxiety r = .23; p<.05 F[6,99] = 7.15, p< .000	As participants that did not experience cyberbullying were removed or not reported this leads to a distortion in the prevalence of cyberbullying. Also there is no control group to give a bases line over averages for the participants.
6	Sánchezet al., 2016	52.7%	To establish the prevalence of cyberbullying and traditional bullying among university students and associated risk factors (e.g Alcohol, drugs family confit and economic problems).	Not Reported	Not Reported	Alcohol OR 0.84 [95% CI 0.38, 1.87]	The study does not report means and standard deviations for the experimental or the control group. Did not use standardised tools to measure alcohol consumption and only allowed for a

							dichotomous response. (Yes or no)
7	Schenk & Fremouw, 2012	8.6%	To investigate the prevalence, impact and the coping strategies used for victims of cyberbullying in university.	(SCL-90-R) Depression 61.13 (10.91) Anxiety 57.20 (13.34)	(SCL-90-R) Depression 56.45 (10.34) Anxiety 52.54 (10.75)	Depression F= 9.90, p=.002 Anxiety F=9.11, p=.003	There was a small sample size for male (n=19) compared to female (n=50) participants.
8	Selkie et al., 2015	17%	To investigate the relationship between cyberbullying among university students and their relationship to depression and alcohol use.	Not Reported	Not Reported	Depression OR 2.1 [95% CI 0.9, 4.9] p=0.07 Alcohol OR 1.1 [95% CI 0.5, 2.3] p=0.76	Does not report means and standard deviation for AUDIT or PHQ-9 for either the experimental group or the control group.
9	Tennant et al., 2015	7.5%	To investigate cybervictimisation among university students in relation to depression and whether social support decrease the risk.	Depression 50.15 (10.45)	no control group	Depression r = .21; p<.01 β = 0.13, p<.05	No control group
10	Tomşa et al., 2013	8.7% victim of cyber bullying	To examine the students experience of bullying and cyberbullying and whether there is a risk of depression, anxiety and stress	Not Reported	no control group	Anxiety r=.21; p<.05	Does not report means and standard deviation Not control group Now participant information taken

11	Wolford-Clevenger et al., 2016	40%	To investigate the prevalence and gender of cyber abuse and cyber victimisation	Depression 29.43 (8.57)	no control group	Depression r = .13; p<.01	No control group
12	Wright, 2016	100%	To investigate the effect cybervictimsation has on students mental health over the course of	Depression W1 = 1.87 (.67) W2 = 1.91 (.68) W3 = 1.90 (.63) W4 = 1.91 (.66) Anxiety W1 = 2.01 (.76) W2 = 2.08 (.73) W3 = 2.08 (.77) W4 = 2.13 (.78)	no control group	Depression *W1* r = .51; p<.001 W2 r = .49, p<.001 W3 r = .50, p<.001 W4 r = .46; p<.001 Anxiety W1 r = .26; p<.001 W2 r = .31, p<.001 W3 r = .28, p<.001 W4 r = .18; p<.01	Remove participants that did not experience cyberbullying resulting in a distorted prevalence. Also as there is no control group it is not known the general level of depression and anxiety among the cohort

Depression

Table Three displays a summary of the results from each study in relation to each of the three variables. Nine studies [studies 1, 2, 4, 5, 7, 8, 9, 11, & 12] looked at the relationship between cyberbullying and depression. Five studies [2, 5, 9, 11, & 12] conducted correlations, they reported a significant positive relationship between cyberbullying and depression (r=.13, p<.01) [study 11] to (r=.51, p<.01) [study 12]. Landoll et al., (2013) found that being a victim of cyberbullying predicted (β =.40, p<.01) the risk of developing depression. Schenk and Fremouw (2012) found that there was a significant difference (F= 9.90, p=.002) between victims that report cyberbullying and the control group, finding that victims had higher levels of depression compared to non-cyberbullied participants. Two studies carried out longitudinal research looking at depression. Feinstein et al., (2014) found that depression significantly (t=-3.04, p<.01) increased between time 1 and time 2 compared to the control group. Wright (2016) also found that depression scores increased over the four years, wave one (m= 1.87, SD = .67) and wave four (m = 1.91, SD= .66), indicating that the longer a person is a victim of cyberbullying the more severe the symptoms of depression become. However, Selkie et al., (2015) found that there was no significant difference (aOR 2.1 [95% CI 0.9–4.9] p=.07) between victims and the control group in terms of developing depression.

Table 3 - Results from each study organised into each variable for cybervictimisation

Study	Study	Victims	Control	Depression	Anxiety	Alcohol
1	Feinstein et al., 2014	193	427	t=2.05*		
2	Kokkinos et al., 2014	27	99	r=.41**	r=.22**	
3	Kritsotakis et al., 2017	159	525			OR 0.89/OR 1.28
4	Landoll et al., 2013	108		β =.40**	β =.37*	
5	Na et al., 2015	121		r= .23*	r=.23*	
6	Sánchez et al., 2016	52	106			aOR 0.84
7	Schenk & Fremouw, 2012	69	69	F =9.90**	F =9.11**	
8	Selkie et al., 2015	45	193	OR 2.1		OR 1.1
9	Tennant et al., 2015	267		r=.21**		
10	Tomşa et al., 2013	92			r=.21*	
11	Wolford-Clevenger et al., 2016	502		r=.13**		
12	Wright, 2016	1483		W1 r=.51**	W1 r=.26**	

Note: **p<.01, *p<.05

Anxiety

Six studies [2, 4, 5, 7, 10, & 12] looked at the relationship between anxiety and cyberbullying in their research. Four studies [2, 5, 10, & 12] carried out correlation demonstrating there was a significant relationship between being a victim of cyberbullying and having symptoms of anxiety. Correlation ranged from (r=.21, p<.05) [study 10] to (r=.26, p<.01) [study 12]. Landoll et al., (2013) found that cyberbullying predicts (β =.37, p<.05) increased levels of anxiety in victims of cyberbullying. Schenk and Fremouw (2012) found that there was a significant difference for anxiety (F=9.11, p=.003) between victims of cyberbullying and the control group. Wright (2016) conducted a longitudinal study looking at anxiety at four different time points over four years. It was found that students had higher levels of anxiety (m= 2.01, SD =.76) compared to depression (m=

1.87, SD =.67) but also anxiety increased over time with the mean score from wave one (*m*= 2.01, SD =.76) to wave four (*m*= 2.13, SD =.78).

Alcohol use

Three studies [3, 6, & 8] looked at the relationship between alcohol use and cyberbullying. Sánchez et al., (2016) found that victims of cyberbullying consumed less alcohol compared to non-victims (aOR 0.84, [95% CI 0.38, 1.87]). Selkie et al., (2015) found that there was no significant difference (OR 1.1, [95% CI 0.5, 2.3] *p*=0.76) between victims and the control group and the amount of alcohol consumed. Kritsotakis et al., (2017) compared the risk of alcohol use between males and females victims compared to a control group. They looked at 30 days prior and found there was no significant difference between victims for males (OR 0.89, [95% CI 0.46–1.72]) and females (OR 1.28, [95% CI 0.82–2.01]) and the control group. They also looked at lifetime alcohol use and found that there was no significant risk of alcohol use as a result of cyberbullying for both males (OR 0.72, [95% CI 0.37–1.40]) and females (OR 0.98, [95% CI 0.62–1.56]).

Discussion

The purpose of the current review was to establish whether being a victim of cyberbullying increased the risk of depression, anxiety, and alcohol use in an adult population. Past research has found that there was a significant relationship between mental health and cyberbullying for adolescents (Bottino et al., 2015) and for both adolescents and adults (Kowalski et al., 2014). Some research supports the relationship between increased drug and alcohol use and cyberbullying across age groups (Kowalski et al., 2014). The prevalence of cyberbullying across the studies was between 7.5 to 100 percent, with a mean of 41.14 percent. However, when removing studies that report 100 percent the mean is 29.37 percent. This is similar to what past research reviews has found among adolescent samples (6.5% to 35.4%: Bottino et al., 2015; 20 to 40%: Tokunaga, 2010). This would suggest that victimisation rates between adults and adolescents are similar. In the past traditional bullying has occurred at a higher prevalence compared to cyberbullying (Bottino et al., 2015). However, new estimates now suggest that prevalence for traditional bullying occurs (10 to 35%: Moore et al., 2017) at a similar rate to cyberbullying.

The first research question looks at the relationship between cyberbullying and depression. There is evidence to support that there is a relationship between being a victim of cyberbullying and having increased levels of depression (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). Also, it was found that there is evidence to support that victims of cyberbullying have higher levels of depression compared to non-victims of cyberbullying (Feinstein et al., 2014; Kokkinos et al., 2014; Schenk & Fremouw, 2012). However, another study found that there was no relationship between depression and being a victim of cyberbullying (Selkie et al., 2015). Although, this study only used female participants that may have affected the findings. However, the evidence strongly suggests that there is relationship between cyberbullying and depression.

The second research question looked at the relationship between cyberbullying and anxiety. There is evidence to support that cyberbullying victims have higher levels of anxiety (Kokkinos et al., 2014; Landoll et al., 2013; Na et al., 2015; Schenk & Fremouw, 2012; Tomşa et al., 2013; Wright, 2016). Furthermore, finding suggest that that Victims of cyberbullying have higher levels of anxiety compared to non-victims (Kokkinos et al., 2014; Schenk & Fremouw, 2012). Similar to depression, this suggests that cyberbullying can have a significant negative effect on victims mental health. However, anxiety among the control groups was still high, this suggests that other factors may also play a significant role in anxiety levels as well.

The third research question looked to investigate whether there was a relationship between cyberbullying and alcohol use. There is no evidence to support that victims of cyberbullying have increased alcohol use (Selkie et al., 2015; Kritsotakis, Papanikolaou, Androulakis, and

Philalithis, 2017). Also, as Sánchez et al., (2016) found there was no significant relationship between cyberbullying and alcohol use for victims. This may suggest that as alcohol is consumed so readily in a student population (Heather et al., 2011) the effects of cyberbullying on alcohol consumption are marginal compared to a control group (Selkie et al., 2015). Whereas, research found a significant relationship between being a victim of cyberbullying and alcohol use in adolescent participants (Ybarra, Diener-West, & Leaf, 2007). However, it is possible that adults (students) use other coping mechanism for negative emotions experienced as a result of cyberbullying. Kritsotakis et al., (2017) also found in their study that there was a significant association between drug use and cyberbullying for females but not for males.

Past Research

This review did have similar finding to past systematic reviews for depression and anxiety (e.g Bottino et al., 2015; Kowalski et al., 2014). However, this did not find that alcohol use was a significant factor. Whereas, Kowalski et al., (2014) looking at both adolescents and adults, combining both drugs and alcohol use and found that alcohol and drug use was a significant factor. However, when this is broken down to only look at alcohol use and young adult it was found not to be a significant factor in cyberbullying. Whereas, drug use for adolescents may have more of a significant impact. Researchers looking at adolescents found that there is a significant relationship between cyberbullying and substance misuse (Litwiller & Brausch, 2013). Furthermore, researcher looking at

drug use found that there was a significant relationship between drug use for females victims of cyberbullying (Kritsotakis et al., 2017). This may have led to a distortion in Kowalski et al., (2014) data. Kowalski et al., (2014) also found that depression and anxiety was significantly linked to being a victim of cyberbullying. This finding was also supported when looking at only young adult in the current review. Bottino et al., (2015) found that there was a significant relationship between cyberbullying and mental health in an adolescent population. The current review found similar findings to Bottino et al., (2015) in an adult population. This suggests that adolescents and adults react in similar ways to cyberbullying.

Limitations of studies

One of the limitation surrounding this area is the definition and concepts used to define cyberbullying. Due to the fact there is no predefined definition for cyberbullying (Bottino et al., 2015; Kota, et al., 2014) or what behaviours constitute cyberbullying (Zych et al., 2016). Cyberbullying is subjective within the literature and how researchers choose to measure cyberbullying. Several of the studies either used a dichotomous or trichotomous (‘Yes’, ‘No’, & ‘Don’t know’) responses in define cyberbullying (Feinstein et al., 2014; Selkie et al., 2015; Tomşa et al., 2013). Also, some studies only choose to use one (Sánchez et al., 2016) and Feinstein et al., (2014) used four dichotomous (‘Yes’ & ‘No’) questions to measure cyberbullying. Therefore, these studies did not look at prevalence and may not have been looking at cyberbullying but possibly been studying cyber-aggression (e.g Bauman et al., 2012).

Many studies failed to take into account any underlying psychological issues that may have been present in the student community and this is evident as many of the control groups also have high levels of depression and/or anxiety. This issue was noted by both Schenk and Fremouw (2012) and Selkie et al., (2015) that the increase in depression, anxiety, or alcohol use may not be the direct result of cyberbullying. These issues may be the result of underlying problems that are not taken into account (Schenk & Fremouw, 2012). For example, Bewick et al., (2008) looked at 1129 university students and found that 29 percent of students report some kind of mental health problem. It may be that being a student is stressful and may natural increase stress, depression, and anxiety regardless of whether cyberbullying is involved. Furthermore, cyberbullying may exacerbate these underlying issues rather than be the primary cause of them. With alcohol uses one coping mechanism used by students while studying at university.

Implications

These findings suggest that more research needs to be done, this systematic reviews partially supported what other reviews have found. This suggests that there is a significant problem for many universities (Kokkinos et al., 2014). More needs to be done by schools and universities, to teach adolescents and young adults the risks of the internet and where to seek help. If they become a victim of cyberbullying. Social media companies need to make it easier to report cyberbullying. Far more research needs to be done looking at the effects of alcohol and drug use

(e.g., Kritsotakis et al., 2017) in a student population with only three studies looking at alcohol use.

Strength and Weakness

One of the strength of this study is that it is the first systematic review to only focus on adults. Whereas, past reviews have only looked at adolescents (Bottino et al., 2015) or have combined both adults and adolescents (Kowalski et al., 2014). These behaviours may seem significant when studying just adolescents or adults combine. However, it would appear that some behaviours are not significant (e.g., alcohol) and it is only by focusing individual population this comes to light.

However, one of the weakness of this review is that only university students are included in this review. Research into cyberbullying for adults is still relatively in its infancy with the earliest article in this review dating back to 2012 (e.g., Schenk & Fremouw, 2012). This means that there is a lack of diversity in the research sample. This is an issue as there is a lack of research looking at cyberbullying in other environments. There is a small but growing body of literature that has studied cyberbullying in the workplace (Aboujaoude, Savage, Starcevic, & Salame, 2015; West et al., 2014). For example, researchers found that 72 out of 158 trainee doctors working in the NHS had experienced cyberbullying (Farley et al., 2015). This suggests that cyberbullying can also affect adults in other environments outside of education. Also, as non-English journal articles were not included in this review, this may have changed the overall result of the finding. Considering there is a growing body of Spanish research

that is looking at cyberbullying (e.g., Zych et al., 2016), although their review only focus on adolescents and children.

In Summary, this is the first systematic review to focus only on young adults and the risk of depression, anxiety, and alcohol use as a result of being a victim of cyberbullying. Finding suggests that there is a relationship between cyberbullying and an increased risk of depression and anxiety. However, not for alcohol use, although it is difficult to make any firm conclusions based on only three studies. The lack of longitudinal research is an issue with only two studies in this review. More longitudinal research needs to be carried out in the future using control groups to understand the true long term effect of cyberbullying on an adult population.

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