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# Cyberbullying Involvement and Mental Health Problems Among Late Adolescents

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## Abstract

*Exposure to cyberbullying is associated with psychological distress like depressive symptoms, self-injurious behavior and suicidal thoughts. Cyberbullying is thus a major challenge for public health. This study examines the prevalence of cyberbullying and explores the psychological characteristics of adolescents who have experienced cyberbullying. The sample consisted of 4531 Norwegian graduates in high school, age 18–21. The following psychological characteristics were investigated: self-harm, suicide attempts, antisocial behavior, anxiety and depression. Three mutually exclusive groups of cyberbullying were compared: 1) cybervictims, 2) cyberbullies and 3) cyberbully-victims. Participants involved in cyberbullying were further compared to those not involved. The prevalence of cyberbullying in this study was 5 %. There were no significant differences between cyberbullies, cybervictims and cyberbully-victims on any of the psychological variables, except for fewer reported suicide attempts in cyberbullies compared to cybervictims and cyberbully-victims. Late adolescents involved in cyberbullying did however report significantly more anxiety, depression, self-harm, suicide attempts and antisocial behavior, compared to those not involved. Thus, late adolescents involved in cyberbullying struggle more with psychological problems than non-involved adolescents. Increased knowledge about the characteristics of cyberbullies, cybervictims and cyberbully-victims could contribute to better detection and earlier identification of those involved in cyberbullying. This knowledge can further help understand more of the potential psychological vulnerability factors and consequences of cyberbullying, which could be used to optimize preventive measures and treatment.*

**Keywords:** Cyberbully; cybervictim; depression; anxiety; suicide; antisocial behavior

## Introduction

In recent years the awareness of- and focus on Internet related phenomenon like cyberbullying has increased (Wright et al., 2014). In Norway, 98% of adolescents are connected to the Internet on a daily basis (Statistics Norway, 2016). For many late adolescents cyberbullying poses a threat to their health and well-being and has, amongst other things, consequences in terms of mental health problems such as anxiety and depression (Carvalho et al., 2017; Nixon, 2014; van Geel et al., 2014).

This study seeks to provide insight into some of the psychological characteristics related to cyberbullying involvement. More specifically, the purpose is to examine whether cyberbullies, cybervictims and cyberbully-victims differ, and if those involved in cyberbullying differ from non-involved when it comes to mental health problems such as psychological distress, self-destructive behavior, and antisocial behavior.

## Cyberbullying and Traditional Bullying

When it comes to defining cyberbullying, there are still some inconsistencies throughout the literature (Nixon, 2014). Cyberbullying has been defined as "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). Hinduja and Patchin (2015, p.11) define cyberbullying as "willful and repeated harm inflicted through the use of computers, cell phones and other electronic devices." The difficulty of defining cyberbullying may be due to the rapid development in technology and habits of communication, which has the potential to result in new methods of cyberbullying (Paul et al., 2012). Kofoed and Staksrud (2019) argue that it is problematic to base the definition of cyberbullying on that of traditional bullying, considering the differences between the two. Cyber- and traditional bullying have several commonalities (Kowalski & Limber, 2013; Sourander et al., 2010), but differences between them are related to power imbalance (Hinduja & Patchin, 2015; Slonje et al., 2013), repetition (Hinduja & Patchin, 2015; Pelfrey & Weber, 2013; Tokunaga, 2010) and anonymity (Dupper, 2013). Power imbalance and repetition are more easily identifiable in traditional bullying. Repetition is more unclear in cyberbullying because it might take only one post to be indefinitely reposted in different social media, websites and the like. Physical distance is another major characteristic of cyberbullying. Cyberbullies might be less aware of the impact of their behavior because they cannot see their victim's reaction to it (Bonanno & Hymel, 2013). Whether anonymity can make the impact on the cybervictim worse is not agreed upon when students are asked. Some believe it has a huge impact, while others believe the opposite because the cybervictim is not hurt physically and can take avoiding action (Smith et al., 2008). Since the communication is often written (Monks et al., 2016), non-verbal cues and facial expressions may get lost (Nixon, 2014). Reduced social cues combined with anonymity and reduced adult supervision may lead to de-individualization and aggressive behavior (Yao & Flanagin, 2006). When de-individualization occurs, people go along with what others are doing, which could also include cyberbullying. Cyberbullies may act meaner than they would if they were confronting the victim face-to-face due to online disinhibition and the lack of accountability cues (DeHue et al., 2008). Cyberbullying can take place any time and anywhere, making it hard to escape (Bonanno & Hymel, 2013). Additionally, the potential audience is immense (Smith & Slonje, 2010). Another interesting feature of cyberbullying that differentiates it from traditional bullying is the apparent easier path to the cyberbully-victim phenomena where cybervictims become cyberbullies or vice versa (Aboujaoude et al., 2015). Adolescents perceive visual abuse (photos and videoclips) and impersonation as most representative to the construct of cyberbullying (Naruskov et al., 2012). On the Internet, this material can spread quickly and exist for a long time (Brewer & Kerslake, 2015).

## International Prevalence of Cyberbullying

Prevalence rates of cyberbullying vary greatly due to the lack of a standard measuring instrument (Shapka & Maghsoudi, 2017). A review of 159 studies across several countries observed prevalence rates from 1% to 61% for cybervictims, 3% to 39% for cyberbullies, and 2% to 72% for cyberbully-victims (Brochado et al., 2016). Hinduja and Patchin (2015) found prevalence rates of 12% cybervictims, 4% cyberbullies and 3% cyberbully-victims. These numbers are consistent across several studies (Livingstone et al., 2011; Rice et al., 2015).

## Mental Health Problems

Previous studies have reported on higher levels of depressive symptoms, anxiety, low self-esteem, somatization and hostility in both cybervictims and cyberbullies (Kokkinos et al., 2014; Nixon, 2014; Tural Hesapcioglu & Ercan, 2017). However, adolescents who have been shown to have the highest risk of developing mental health problems such as anxiety and depression are those who are both cyberbullies and victims (cyberbully-victims) (Brunstein Klomek et al., 2007; Dupper, 2013; Espelage & Holt, 2013; Selkie et al., 2015). We thus expect to find the same in our study, and hypothesize that those who report both to be cyberbullies and victims will report the highest level of adverse mental health outcomes.

The mechanisms behind this could be understood cumulatively, in terms of a double load, where the adolescents are involved both as a victim and bully with all that that entails. But it could also be related to contextual factors – it has for instance been shown that this group of cyberbully-victims have a particularly poor parental attachment and report a high degree of peer rejection (Bayraktar et al., 2015).

Involvement in cyberbullying in any way has been associated with adverse mental health outcomes (Fahy et al., 2016; Patchin & Hinduja, 2006), which we also expect to find in our study. But where most previous studies have focused

primarily on depression and anxiety, we move beyond and investigate a broader specter of adverse mental health outcomes, including self-harm, suicide attempts, antisocial behavior. We hypothesize that involvement in cyberbullying will be associated with all of these adverse mental health outcomes.

## **Cyberbullying, Self-Destructive Behavior and Antisocial Behavior**

Olweus (1994) found that bully-victims are characterized by a combination of anxious and aggressive behaviors. The Internet's nature may offer already aggressive adolescents a further medium to act out through. Cyberbullies have correspondingly been found to score high on proactive aggression (Sontag et al., 2011), which means that cyberbullies also practiced other aggressive behavior with the aim of achieving social gain. Cyberbullying as an aggressive behavior may further be associated with antisocial behavior (Sticca et al., 2013). Campbell et al. (2013) argue that cyberbullies are more likely to show other problem behavior, like antisocial behavior, in addition to being less likely to engage in prosocial behaviors. Although few studies have looked at the mental health characteristics of cyberbullies specifically, more social difficulties (Campbell et al., 2013) higher drug use, and aggressive behavior (Carvalho et al., 2017) have been reported in this group.

While self-destructive behavior, such as self-harm and suicidal behavior, are not usually thought of as aggressive acts, they could be considered aggression turned inwards. The conceptual framework of the current study draws on Robert Plutchik's theory of suicide and violence that may help us understand this further. The two-stage model of suicide and violence developed by Plutchik (1995) is a theory that can provide an understanding of cyberbullies' and cybervictims' mental health. Plutchik claims that both suicide and violence are aggressive impulses, which are affected by other variables like mental illness, family network, coping strategies etc. These variables may influence whether the aggression is turned inwards (self-harm/suicide) or outward (violent actions). Aggression is defined as an act with the intention to harm anyone physically or mentally (Berkowitz, 1993). Cyberbullying could as such be considered to be an aggressive and intentional act. Based on Plutchik's theory, we see both cyberbullying others and harming oneself as aggressive acts. Cybervictims might turn the aggression towards themselves through self-harm and suicide attempts, whereas cyberbullies might be more prone to turn the aggression towards others. We thus hypothesize that cybervictims will present with more self-destructive behavior, while cyberbullies will present with more antisocial behavior.

In a review Dutton and Karakanta (2013) mention a number of studies that report increased likelihood of aggression in people with depression. For example, negative life events causing depression could lead to aggressive behavior towards people perceived as aversive. Others have found both problem behavior (aggression, delinquency, substance use) and depressed mood in 8.–10. graders to be predictors of involvement in cyberbullying as cybervictims and cyberbullies in 11. grade (Modecki et al., 2013). These associations are important to consider in the attempts of trying to understand and prevent cyberbullying. Still findings are scarce and often inconsistent within this field (Bayraktar et al., 2015). Therefore more knowledge is needed about the specific psychological characteristics of adolescents involved in cyberbullying – both in terms of differences between cybervictims, cyberbullies and cyberbully-victims, but also with regards to psychological characteristics of all those involved in cyberbullying compared to adolescents that are not involved in cyberbullying. No studies have so far looked specifically at both aggression turned inwards and outwards, as well as symptoms of depression and anxiety in cyberbullies, cybervictims cyberbully-victims.

The aim of the current study was thus to illuminate these issues by analyzing the responses from a large and representative survey of Norwegian adolescents, through the following research questions: 1) What is the prevalence of cyberbullying among late adolescents in high school? 2) Are there significant differences between cyberbullies, cybervictims and cyberbully-victims when it comes to psychological distress, self-destructive behavior and antisocial behavior? 3) Are there significant differences between those involved in cyberbullying and those not involved in cyberbullying in terms of psychological distress, self-destructive behavior and antisocial behavior? 4) Are the prevalence rates and/or associations influenced by sociodemographic variables? Besides from gender and age, we were particularly interested in perceived financial situation (as an indication of socioeconomic status), and birth place (as an indication of ethnicity), in order to investigate for possible discrimination effects and confounding.

Answers to these questions may contribute to a deeper understanding of how the various types of cyberbullying involvement relate to psychological distress more generally, as well as self-destructive and antisocial behavior specifically, with potential implications for intervention and prevention.

# Method

## Participants

This study uses data material from a cross-sectional study carried out by Norwegian Social Research Institute (NOVA) in 2015. All the data were collected through self-report, filled out by the participants. The participants were seniors in high school in a nationally representative sample of secondary schools in Norway, that is late adolescents aged 18 to 21 years. A total of 6848 late adolescents were asked to respond to a self-report questionnaire. Classes and groups with a lower response rate than 10% were excluded from the data analysis as it was assumed that schools had not followed the study instructions and thus could represent a risk of selection bias if they were included. 4531 of the 6848 requested students filled out the questionnaire, which makes up a response rate of 66%.

## Recruitment

The survey (Mossige & Stefansen, 2016) is a follow-up study of a survey conducted in 2007. In the first survey schools were selected by the Norwegian statistics bureau. First, all senior high schools in Norway were categorized into five geographical strata to ensure geographical representativeness. Second, the schools were stratified within each region according to academic high schools, vocational high schools, and schools with both curricula (3 strata). The 67 participating schools were thereafter drawn according to strata size, ensuring proportional allocation and grouped into five geographic regions. 41 of the 67 participating schools in 2007 agreed to participate in the 2015 study. In addition, eight replacement schools attended and thus 49 schools attended in total. Contact with the schools first took place through e-mail to inform them about the study, and later through telephone contact with the principals. At each school the principal designated a contact person who was responsible for conducting the study, as well as maintaining contact between the school and NOVA.

## Procedure

The study was assessed and advised by The Norwegian Center for Research Data (NSD). NSD then applied to The Norwegian Data Protection Authority for license, which was granted. Before the study started the school's contact persons received information on how to conduct the study by the company Conexus. The company arranged the electronic solution so they could log onto an order portal and receive the correct number of user names. Students completed the questionnaire on computers at school during school hours with a teacher present, and was handled as an examination. Students who did not want to participate or canceled their participation throughout the study ( $n = 2318$ , 34%) had to perform other school work the remaining time. The survey was anonymous and the students' identities cannot be traced. The entire questionnaire consisted of 142 questions.

## Measures

**Socio-demographic variables.** Information was collected concerning participants' gender, age (i.e., date of birth), education (general studies/sports/music, dance and drama/arts and crafts/electrical subjects/health and social care/media and communication/natural resource/service and transport/technique and industrial production), country of birth, as well as country of birth of their mother and father, and their perception of the financial situation of the family (poor/unstable or good/stable). Country of birth was recoded for analysis to "Norway" versus "other". Education was recoded to "general studies" versus "vocational studies". See Table 1 for descriptives.

**Cyberbullies, cybervictims and cyberbully-victims.** Cyberbullying was measured by question batteries, asking about experiences with being a cyberbully, cybervictim and cyberbully-victim. These questions were developed by Hinduja and Patchin (2015) to identify specific experiences with cyberbullying; Cronbach's alpha is  $\geq .90$  for the cyberbullying victimization scale, as well as for the cyberbullying offending scale. Prior to the present study, the questions were translated into Norwegian by the research team. The questions were as follows: "I have been cyberbullied in these ways during the past month" (cyberbullying victimization scale) and "I have cyberbullied others in these ways during the past month" (cyberbullying offending scale). Each of the issues raised was followed by eight items about experiences with various forms of cyberbullying. Participants who had been cybervictims could for example tick off: "Someone posted a mean or hurtful picture of me online." For cyberbullies the corresponding question was: "I posted a mean or hurtful picture of someone online." The participants rated their responses on a 5-point likert scale: 1) "Never", 2) "Once", 3) "A

few times", 4) "Several times" and 5) "Many times". The cyberbullying forms included in the questionnaire were related to experiences with mean or hurtful comments, photos, videos, websites, rumor spreading, threats of harm or identity theft (pretending to be someone else). The present study categorized late adolescents with "a few", "several" and "many" cyberbullying experiences into three mutually exclusive groups: cyberbullies, cybervictims and cyberbully-victims. Those answering "a few", "several" and "many times" at least once on the victimization scale, but answering "never" or "once" on the aggression scale were considered exclusively victims. Those who answered "a few", "several" and "many times" at least once on the aggression scale, but answered "once" or "never" on the victimization scale were considered exclusively aggressors.

The eight different cyberbullying forms were weighted equally, since all of them can be equally damaging for the individual experiencing cyberbullying. Not all experiences with cyberbullying are the same, but it is difficult to weight them objectively since each person's experience is unique. Albeit a previous study found some support for one particular type of bullying (picture - and video clip bullying) being worse than others (e.g. text messaging and phone calls) (Smith et al. 2008), but the technological changes and digital habits of young people change fast and this could have a profound impact on the experience of the various forms of cyberbullying. Thus, we chose to weight the different types of cyberbullying equally, which is also in line with a recent and validated measure of cyberbullying victimization and offending (Hinduja & Patchin, 2015).

**Self-harm.** The questionnaire also included questions about self-harm. These questions were selected based on what has been used in previous similar studies. Three questions asked about self-harm: Have you ever "hurt yourself, for example by cutting yourself?", "been to the emergency room due to hurting yourself on purpose?" and "ended up in hospital due to hurting yourself on purpose?". The variable was dichotomized so that 1 indicated at least one episode of self-harm, whilst 0 indicated no such experiences.

**Suicide attempts.** Three questions asked about suicide attempts: Have you ever "deliberately taken an overdose of pills or other medications?", "tried to end your life?" and "ended up in hospital due to trying to end your life?" The answering options were "never", "once" and "several times". These questions about suicidal behavior were taken from the Norwegian Social Research study "Ung i Oslo longitudinell" (LUNO) - Young in Oslo Longitudinal". The variable describing suicide attempts was dichotomized so that 1 indicated at least one episode of suicide attempt, whilst 0 indicated no such experiences.

**Antisocial behavior.** Five questions asked about antisocial behavior. These were the same as those used in the 2007 study and were selected based on what previous studies have reported about externalizing behavior (Camodeca et al., 2002; Nansel et al., 2004; Stein et al., 2007). Questions about antisocial behavior (in the past 12 months) in this study dealt with vandalism, theft, threatening others in order to get money, burglary and fighting (with weapons, such as knives). The variable was dichotomized so that 1 indicated at least one episode of antisocial behavior whilst 0 indicated no such experiences.

**Anxiety and depression.** Anxiety and depression were measured using the Hopkins Symptom Checklist (HSCL-25) translated into Norwegian, which is a self-report form consisting of 25 questions. Ten of the questions intend to measure anxiety and fifteen of the questions measure depression. The response options were rated on a 4-point scale: 1) "Not bothered at all", 2) "A little bothered", 3) "Quite a bit bothered" and 4) "Extremely bothered". In the current sample, the Cronbach's alpha for the depression subscale was .93, while Cronbach's alpha for the anxiety subscale was .88. The optimal cutoff (for the entire scale) when compared to psychiatric interviews in a Norwegian study, were found to be  $\geq 1.75$  in women and somewhat lower in men (Sandanger et al., 1998). The same cutoff ( $\geq 1.75$ ) was also found to be the preferred option in a Swedish study, and this cutoff was thus chosen as an indication of depression and anxiety for both boys and girls in the current study, although we use the subscales both as continuous and categorical variables. We use the scale as a continuous measure to indicate level of psychological distress, and as a categorical measure to indicate possible caseness of depression and anxiety. With regards to the ability to predict diagnoses of anxiety and depression, the entire HSCL-25 scale was found to be just as good as the anxiety and depression subscales of the HSCL-25 (Sandanger et al., 1998).

**Data analysis.** The computer program SPSS version 22 was used for all statistical analyzes. To describe background variables for the entire sample frequency tables were used, and chi-square tests were used to compare the groups cyberbully, cybervictim and cyberbully-victim on background variables and target variables. Distribution and outliers for all investigated variables were checked. Independent samples t-test was used to compare those involved in cyberbullying (all three groups combined) to those not involved in cyberbullying. Due to the large sample size of the two groups

compared in this analysis ( $n = > 200$ ), a slightly skewed distribution on some variables were not considered a problem (Tabachnick, Fidell, & Osterlind, 2001). To investigate adjusted associations between exposure to bullying and target variables, we used logistic regression analyses. Independent variables were tested for multicollinearity, and based on the high correlation between the depression and anxiety subscale, it was decided to only include total score of HSCL-25.

## Results

Of all participants ( $n = 4531$ ), nearly 5% ( $n = 208$ ) reported being involved in cyberbullying in the last month. 3% of these were cybervictims, 1% were cyberbullies and 1% were cyberbully-victims. Among those involved, 68% ( $n = 142$ ) were cybervictims, 16% ( $n = 33$ ) were cyberbullies and 16% ( $n = 33$ ) were cyberbully-victims. Fifty-three percent of them were girls, with an average age of 19.5 years. Ninety-three percent took general education and 5.5% took vocational studies. See Table 1 for more demographic and background characteristics.

Table 1. Description of all Participants ( $n = 4531$ ), as well as a Statistical Comparison Between the 3 Groups Reporting Involvement in Cyberbullying ( $n = 208$ ).

	Total		Cybervictim		Cyberbully		Cyberbully-victim		$\chi^2$
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	
<b>Gender:</b>									8.10*
Male	1822	40.8	59	41.5	21	70.0	16	48.5	
Female	2644	59.2	83	58.5	9	30.0	17	51.5	
<b>Age:</b>									4.38
18-19	4198	93.7	131	92.9	33	100	31	96.9	
≥ 20	284	6.3	10	7.1	0	0	1	3.1	
<b>Education:</b>									3.81
General	4218	94.5	131	92.3	33	100	29	87.9	
Vocational	245	5.5	11	7.7	0	0	4	12.1	
<b>Family finances:</b>									2.90
Good	4122	92.4	121	87.1	30	90.9	32	97.0	
Poor/unstable	340	7.6	18	12.9	3	9.1	1	3.0	
<b>Birth place:</b>									
Mother:									0.24
Norway	3915	87.0	120	84.5	27	81.8	27	81.8	
Foreign country	586	13.0	22	15.5	6	18.2	6	18.2	
Father:									0.22
Norway	3889	86.5	120	85.1	27	81.8	28	84.8	
Foreign country	607	13.5	21	14.9	6	18.2	5	15.2	
Participant:									0.66
Norway	4178	92.8	131	92.3	29	87.9	30	90.9	
Foreign country	324	7.2	11	7.7	4	12.1	3	9.1	
<b>Self-harm</b>	656	14.5	41	28.9	5	15.2	10	30.3	2.79
<b>Suicide attempt</b>	352	7.2	27	19.0	1	3.0	9	27.3	7.09*
<b>Antisocial behavior</b>	301	6.6	25	17.6	5	15.2	7	21.2	0.43
<b>Depression (≥ 1.75)</b>	1683	39.8	96	69.6	16	50.0	23	69.7	4.64
<b>Anxiety (≥ 1.75)</b>	1208	28.6	77	56.6	15	56.9	19	57.6	1.08

Note. \* $p < .05$ .

## Differences Between Cyberbullies, Cybervictims and Cyberbully-Victims

**Gender.** There were significant gender differences between cyberbullies, cybervictims and cyberbully-victims ( $p < .05$ ), as shown in Table 1. More boys than girls belonged to the group of cyberbullies, while more girls belonged to the group of cybervictims.

**Age.** No significant age differences were found between the groups. As shown in Table 1, all of the participants involved in cyberbullying were 18-19 years old compared to 92.9% of the cybervictims, but the difference was not statistically significant ( $p > .05$ ).

**Education.** All participants involved as cyberbullies took general studies compared to only 87.9% of cyberbully-victims and 92.3% of cybervictims, but the differences were not statistically significant ( $p > .05$ ).

**Family finances and birth place.** Most of those involved in cyberbullying reported good family finances, with somewhat fewer in the cybervictim group; 87.1% of cybervictims, 90.9% of cyberbullies and 97.0% of cyberbully-victims reported good family finances. Most participants involved in cyberbullying were born in Norway. 84.5% of the cybervictims' mothers and fathers were born in Norway and 92.3% of the cybervictims themselves were born in Norway. The cyberbullies' parents were mostly also born in Norway (parents: 81.8%) and 87.9% of the cyberbullies themselves were born in Norway. Cyberbully-victims' parents were mostly also born in Norway (81.8% of the mothers, 84.8% of fathers) and 90.9% of cyberbully-victims themselves were born in Norway.

**Mental health.** The only significant difference between the three cyberbully groups were on suicide attempt, where a significantly lower proportion of cyberbullies reported of suicide attempt compared to cybervictims and cyberbully-victims. There were no other significant differences between the groups on neither anxiety, depression, self-harm nor antisocial behavior.

Table 2. Comparison of Late Adolescents Involved ( $n = 208$ ) and Not-Involved ( $n = 4323$ ) in Cyberbullying. T-Tests Were Used for Continuous Variables and Chi-Square for Categorical Variables.

	Non-involved		Involved		$t/\chi^2$
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
<b>HSCL anxiety</b>	1.54	.52	1.96	.71	8.21***
<b>HSCL depression</b>	1.72	.63	2.17	.74	8.50***
<b>HSCL total score</b>	1.65	.56	2.08	.69	8.77***
	%	<i>N</i>	%	<i>N</i>	
<b>Depression <math>\geq 1.75</math></b>	38.5	1548	66.5	135	62.12***
<b>Anxiety <math>\geq 1.75</math></b>	27.3	1097	55.2	111	71.81***
<b>Total over cut-off <math>\geq 1.75</math></b>	35.5	1422	64.7	130	69.00***
<b>Self-harm</b>	13.9	600	26.9	56	27.27***
<b>Antisocial behavior</b>	6.1	264	17.8	37	43.67***
<b>Suicide attempt</b>	6.7	288	17.8	37	36.90***
<b>Gender:</b>					3.24
Male	40.50	1726	46.80	96	
Female	59.50	2535	53.20	109	
<b>Education:</b>					1.25
General	94.6	4025	92.8	193	
Vocational	5.4	230	7.2	15	
<b>Family finances:</b>					2.96
Good	92.5	3939	89.3	183	
Bad/unstable	7.5	318	10.7	22	

**Note.** \* $p < .05$ , \*\* $p < .01$ , \*\*\* $p < .001$ .

## Differences Between Those Involved and Those not Involved in Cyberbullying

After comparing cybervictims, cyberbullies and cyberbully-victims, these three groups were combined into one group. The combined group called "involved" did not differ from the non-involved on any of the sociodemographic variables. They did, however, differ significantly on all the mental health outcomes in that the late adolescents involved in cyberbullying reported significantly more involvement in self-harm, suicide attempts, antisocial behavior, anxiety and depression (Table 2). Nearly twice as many in the involved (64.7%) scored above the clinical cut-off (1.75) on HSCL-25, compared with those not involved (35.5%).

We also investigated the association between involvement and non-involvement in cyberbullying and psychological outcomes through multivariate statistics (regression analysis), with involvement in cyberbullying as the outcome variable, and psychological distress, suicide attempt, self-harm and antisocial behavior as the independent variables (Table 3). Involvement in cyberbullying was significantly associated with the vast majority of mental health outcomes, even when controlling for demographic variables (age, gender, family finance and birth place).

Table 3. *Associations Between Demographics and Mental Health Outcomes and Involvement in Cyberbullying (Adjusted Logistic Regression Model)\*.*

	Involvement in cyber bullying				
	<i>B</i>	<i>SE</i>	<i>OR</i>	95% CI	<i>p</i> -value
Age (18-19)	0.61	0.36	1.83	[0.27, 1.10]	.09
Gender (female)	-0.74	0.17	0.48	[0.34, 0.66]	< .001
Family finance (poor/unstable)	0.15	0.25	1.17	[0.72, 1.89]	.54
Birth place: mother (Norway)	-0.49	0.28	0.61	[0.35, 1.06]	.08
Birth place: father (Norway)	0.12	0.30	1.12	[0.63, 2.00]	.69
Birth place: participant (Norway)	0.05	0.37	1.05	[0.51, 2.16]	.89
Psychological distress (total score $\geq$ 1.75)	1.27	0.17	3.57	[2.54, 5.02]	< .001
Self-harm	0.37	0.20	1.44	[0.97, 2.15]	.07
Suicide attempt	0.51	0.23	1.66	[1.05, 2.63]	.03
Antisocial behavior	0.82	0.21	2.26	[1.50, 3.42]	< .01

**Note.** \*All variables are dummy coded with 0 as reference category and 1 stated in parentheses.

## Discussion

The aim of this study was to investigate expressions of aggression turned inwards and outwards, as well as symptoms of depression and anxiety among late adolescents involved in cyberbullying. Through a large, representative cross-sectional study of more than 4500 late adolescents in high school, prevalence and characteristics of cyberbullies, cybervictims and the combination of the two were investigated. The prevalence of cyberbullying in this population was 5%. Those who reported experiences with cyberbullying were divided into three mutually exclusive groups. We wanted to investigate whether cybervictims, cyberbullies and cyberbully-victims were significantly different concerning psychological characteristics.

Our prevalence figures of 3% cybervictims, 1% cyberbullies and 1% cyberbully-victims are consistent with previous research findings (Hinduja & Patchin, 2015; Kowalski & Limber, 2013; Olweus, 2012; Rice et al., 2015; Wendelborg, 2012). Next we wanted to compare all those involved in cyberbullying (cybervictims, cyberbullies and cyberbully-victims) with the rest of the study population (non-involved) on adverse mental health outcomes. The results demonstrated statistically significant differences between the involved and non-involved on the vast majority of psychological outcomes. The late adolescents involved in cyberbullying had a close to four-fold risk of anxiety and depression, they were more than twice as likely to be involved in antisocial behavior, and were more likely to have attempted suicide. This was in line with our hypothesis that all those involved in cyberbullying, whether it is on the bully or victim side, represent a particularly vulnerable group.



## **Psychological Distress and Self-Injurious Behavior**

Cyberbully-victims reported the highest rates of suicide attempts among the three groups involved in cyberbullying, which was in line with our hypothesis. Exposure to cyberbullying is related to higher risk of suicide attempts, and cyberbully-victims seem to be a particularly vulnerable group consistent with theory and research findings (Brunstein Klomek et al., 2007; Dupper, 2013; Espelage & Holt, 2013; Lien & Welander-Vatn, 2013). Suicide attempt is a serious problem among cyberbully-victims and cyberbully-victims, as indicated in our study. In previous studies (Brunstein Klomek et al., 2007; Lien & Welander-Vatn, 2013) both frequent and infrequent involvement in cyberbullying was found to increase the risk of suicidal thoughts and suicide attempts. According to Hinduja and Patchin (2015) it is important to stress that cyberbullying itself most likely does not lead to suicide attempts. Cyberbullying can, however, contribute to aggravating an already stressful life situation further, which in turn may increase the likelihood of suicidal thoughts and suicide attempts.

## **Depression, Anxiety and Self-Harm**

Contrary to our hypotheses, we did not find significant differences between cyberbullies, cyberbully-victims and cyberbully-victims in depressive symptoms. Tendencies of more depressive symptoms among cyberbully-victims than cyberbullies and cyberbully-victims were not statistically significant. Several studies indicate most depression among cyberbully-victims (Brunstein Klomek et al., 2007; Dupper, 2013; Kowalski & Limber, 2013; Selkie et al., 2015), but this was not supported in our study. Hinduja and Patchin (2010) found that adolescents involved in cyberbullying struggle more than non-involved adolescents when it comes to suicidal ideation, which is related to depression. This supports our finding of significantly more depression among those involved with cyberbullying compared with those not involved.

Based on previous empirical findings (Hawker & Boulton, 2000; Lien & Welander-Vatn, 2013), we expected to find more self-harm and more anxiety among cyberbully-victims than among cyberbullies. Self-harm may be related to anxiety and depression (Crowe, 2014). However, our results did not confirm more self-harm in cyberbully-victims and cyberbully-victims than among cyberbullies, as these differences did not reach statistical significance. The findings on these psychological characteristics may imply that cyberbullies and cyberbully-victims self-harm just as much, and that measures against self-harming thus should be directed towards helping both cyberbully-victims and cyberbullies. Furthermore, with 65% of those involved in cyberbullying scoring above the clinical cut-off on HSCL-25, anxiety and depression seem to be a serious problem among late adolescents with any type of cyberbullying experience.

## **Gender Differences**

Research findings regarding gender differences in cyberbullying are inconclusive (S. K. Schneider et al., 2012). We found that more girls than boys were cyberbully-victims and that more boys than girls were cyberbullies, which is in line with our hypothesis and some previous findings (Beckman et al., 2013; Wang et al., 2009). However, Beckman et al. concluded that 1) girls are just as likely to be cyberbullies as boys, 2) girls are more likely to be cyberbully-victims and 3) more girls than boys are cyberbully-victims. Other research also suggests that girls are involved in cyberbullying as cyberbully-victims (Smith et al., 2008; Sourander et al., 2010). In cyberbullying the gender differences seem to be less prominent than in traditional bullying. Sourander et al. argue that boys typically are physically stronger than girls, and since cyberbullying does not call for physical strength, girls could to a greater extent dare to bully others online. Adolescent girls tend to participate in more indirect forms of bullying, like rumor spreading and socially excluding peers (Bowie, 2007). Therefore, the verbal and relational nature of cyberbullying fits closely with female socialization practices (Wade & Beran, 2011).

## **Theoretical Reflections**

Just a few previous studies have examined the relationship between cyberbullying and involvement in other antisocial behavior. Ybarra and Mitchell (2004) found antisocial behavior like damaging property, consumption of cigarettes and alcohol to be associated with cyberbullies, while others suggest that antisocial behavior, such as rule-breaking behavior and traditional bullying, increase the risk of cyberbullying involvement (Sticca et al., 2013). It is argued that cyberbullying may be an additional way of attacking people. An American study (Wang et al., 2012) with over 7,000 adolescents found that most cyberbullies belonged to a group of aggressive adolescents who were related to substance abuse and weapon possession. The problems were particularly related to boys. It is thus argued that the online world may offer already aggressive youth an additional medium to act out through, and that these students probably could be identified as aggressive by teachers, fellow students or parents in offline situations (Sontag et al., 2011).

Our findings provide new knowledge about how cyberbullying and antisocial behavior are interrelated. Unlike the aforementioned research, we did not find a significant correlation between cyberbullying and antisocial behavior. This indicates that late adolescents involved in cyberbullying (as a cyberbully, cybervictim or cyberbully-victim) are equally aggressive. Cyberbullying might rather happen due to the nature of the Internet, where less direct contact and less salient power imbalances might lead to individuals reacting in a more aggressive manner due to loss of inhibitions and consequences (Sticca et al., 2013).

We did, however, find that cyberbullies, cybervictims and cyberbully-victims differed in relation to suicide attempts. Although the cross-sectional nature of our study precludes any causal inferences, cybervictims and cyberbully-victims appears to be the most vulnerable to attempt suicide. Finally, few significant differences between cyberbullies, cybervictims and cyberbully-victims may imply that they are quite similar.

In his model of suicide and violence Plutchik (1995) states that depression, hopelessness, life problems and impulsivity correlate significantly with both suicide and aggression. Therefore, the risk of turning the aggression inwards (self-harm, suicide attempts) or outwards (against others) increases. Suicide is strongly related to mental disorders, especially depression (B. Schneider et al., 2014). Depression and aggression are thus not mutually exclusive (Dutton & Karakanta, 2013; Modecki et al., 2013). Plutchik's theory can thereby help to explain the present study's finding that cyberbullies, cybervictims and cyberbully-victims struggle equally with depression and aggression. Our finding that cyberbully-victims are more vulnerable to attempt suicide than cybervictims can be explained by this group's double load in terms of experiencing both inward- and outward aggression through self-harm and harming others.

## **Limitations**

The study population in the present study consisted of senior graduates in high schools. Those who never entered or dropped out of high school (approximately 30% of an age cohort) are not part of this sample. This group may include several late adolescents involved in cyberbullying. The current results can therefore not be generalized to this group of late adolescents. Further, some school classes were excluded from the study as they had responded to less than 10% of the survey and thus were assumed to have not followed the instructions. This could represent a potential bias. However, as the overall response rate was relatively high (66%) we do not consider this a threat to the external validity of the findings.

The questions about cyberbullying in this study sought insight into cyberbullying experiences during the past month. This wording will exclude late adolescents who have experienced cyberbullying in an extended period of time. Nevertheless, recent memories are more present and reporting cyberbullying experiences could therefore be more precise. It is easier to remember how many times you have experienced cyberbullying the past month than the last year.

There is a possibility that higher suicide attempts among cyberbully-victims may be due to a statistical artifact. There may have been too few people in the group of cyberbullies to show the actual prevalence, which underlines the need for follow-up studies with greater statistical power. We also encourage follow-up studies with longitudinal designs to be able to assess directionality of the associations found in the current study.

The proportion of youths in the whole study population that scored above the clinical cut-off on HSCL was very high (36%). This is in line with recent Norwegian reports documenting a significant increase of psychological distress in this particular age group, but it could also be due to the cut-off we used ( $\geq 1.75$ ) which has not been validated for this particular population.

According to Bakken (2018) the extent of self-reported depressive symptoms has gradually increased among girls since the beginning of the 2010s. Over the past two years, the increase has been substantial, especially in high school. Also among boys, Bakken's latest figures show an increase in the extent of depressive symptoms.

## **Implications for Research and Practice**

We found remarkably high rates of depression among late adolescents involved in cyberbullying. Sixty-five percent of those involved scored above the clinical cut-off (1.75) on the depression sub-scale of HSCL-25. These scores indicate a need for treatment, since a score above the cut-off on HSCL is an indication of requiring treatment for mental disorders. This issue should be followed up in further studies and in treatment practices.

## Conclusion

In this study of the prevalence and psychological characteristics of cyberbullying in a large cohort of seniors in high school, five percent of the late adolescents had been involved in cyberbullying. We found cyberbullies, cybervictims and cyberbully-victims to be quite similar in terms of depression and aggression, but the groups combined differed from the students that were not involved in cyberbullying. Also, 65% of those involved in cyberbullying scored above the clinical cut-off on a symptom scale of depression and anxiety. Since most of the late adolescents involved in cyberbullying appear to be struggling with symptoms of anxiety and depression, this should be taken into account in the follow-up and possible treatment of these individuals. Cyberbullies, cybervictims and cyberbully-victims appear to be more similar than expected in terms of psychological distress, self-destructive behavior and antisocial behavior, which could provide treatment implications. Cybervictims, cyberbullies and cyberbully-victims were more vulnerable than those not involved in cyberbullying in terms of depression, anxiety, self-harm, suicide attempts and antisocial behavior. Increased knowledge about the psychological characteristics of cyberbullies, cybervictims and cyberbully-victims could contribute to better detection and earlier identification of those involved in cyberbullying. This knowledge can further help to understand more of the potential psychological vulnerability factors and consequences of cyberbullying, which could be used to optimize preventive measures and treatment.

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**Dr. Silje Endresen Reme** works as a professor of health psychology at University of Oslo, and as a clinical psychologist at the Department of Pain Management and Research at Oslo University Hospital. She has worked as a senior researcher at Uni Research Health, where she co-headed the research group Stress, Health and Rehabilitation. Dr. Reme has long-standing interests in the field of work and health, disability, and rehabilitation. Her research focuses on chronic pain conditions and mental health problems in working life, with a particular focus on risk disability factors and interventions to improve outcomes.

**Svein Mossige** is a professor in clinical child psychology, Department of Psychology, University of Oslo. His research fields include violence and sexual abuse in families, self-harm and resilience, and pediatric psychology.

