

Article

Traditional, Cyber and Combined Bullying Roles: Differences in Risky Online and Offline Activities

Sebastian Wachs ^{1,*}, Marianne Junger ² and Ruthaychonee Sittichai ³

¹ Department of Educational Studies, University of Bremen, Bibliothekstr. 1-3, 28359 Bremen, Germany

² Industrial Engineering and Business Information Systems, University of Twente, P.O. Box 217, 7500-AE Enschede, The Netherland; E-Mail: m.junger@utwente.nl

³ Faculty of Humanities and Social Sciences, Prince of Songkla University, Muang, Pattani 94000, Thailand; E-Mail: ruthsittichai@gmail.com

* Author to whom correspondence should be addressed; E-Mail: s.wachs@uni-bremen.de; Tel.: +49-421-218-69111.

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Abstract: This study (1) reports frequency rates of mutually exclusive traditional, cyber and combined (both traditional and cyber) bullying roles; and (2) investigates whether adolescents belonging to particular bullying roles show higher levels of involvement in risky online activities (Compulsive Internet Use (CIU), online grooming victimization, and sexting) and risky offline activities (bad behavior in school, drinking alcohol and truancy) than non-involved adolescents. The sample comprised self-reports of 1928 German, Dutch and Thai adolescents (Age = 12–18; M = 14.52; SD = 1.6). The results revealed age, sex and country differences in bullying frequency rates. CIU, sending of sexts and risky offline activities were most strongly associated with combined bully-victims. The receiving of sexts was most strongly associated with combined bullies; and online grooming victimization was most strongly related to cyber bully-victims. Another important finding is that the associations between risky offline activities and combined bullying are stronger than for traditional and cyber bullying. The findings contribute to better understanding of the associations between varying bullying roles and risky online and offline activities among adolescents. In sum, the results underscore the need to promote life skills rather than adopting more conventional approaches, which focus almost exclusively on reduction of risks.

Keywords: traditional bullying; cyberbullying; compulsive Internet use; online grooming; sexting; risky offline activities; life-skills

1. Introduction

Bullying is a multifaceted phenomenon that describes a variety of physically, verbally and relationally aggressive behaviors that occur repetitively in the long-term against a defenseless victim [1]. Identifying various roles of those adolescents who are involved in traditional bullying has been a crucial aspect of previous research. The results identified three main roles: bullies, victims, and bully-victims. The person who initiates and carries out the major role in bullying is called the bully, the target person who suffers from bullying is called the victim. Bully-victims who are both bullies and victims seem to be a special risk group who display the psychological characteristics of both victims and bullies and often show worse emotional, social and psychological difficulties than pure victims or pure bullies [2–5].

A much more recent manifestation of bullying is cyberbullying, which can be defined as “any behavior performed through electronic or digital media by individuals or groups that repeatedly communicates hostile or aggressive messages intended to inflict harm or discomfort on others” [6] (p. 278). As in traditional bullying (bullying without the use of ICT), roles like cyberbully, cybervictim and cyberbully-victim were identified in cyberbullying. With the increasing research on cyberbullying, new participant roles that combine traditional and cyber bullying roles like victim-cybervictims (hereafter combined victims), bully-cyberbullies (hereafter combined bullies) or bully-victim-cyberbully-cybervictims (hereafter combined bully-victims) have been debunked [7–9].

To date, there has been a lively discussion in bullying research whether involvement in either cyber or traditional bullying or even in both has a bigger impact on adolescents [7,10]. Most research suggests that those adolescents involved in traditional bullying share nearly the same level of engagement in similar risky and problematic behaviors as those engaged in cyberbullying [11–14]. However, research concerning combined bullying seems to be limited and contradictory. While some studies report that combined bullies, victims and bully-victims display worse engagement in risky and problematic behaviors in comparison with pure cyber or traditional bullying roles [8,15]; other studies state that if one adolescent is already involved in traditional bullying, the additional involvement in cyberbullying does not increase negative outcomes [11,13,16]. These inconsistent findings suggest a strong argument for including combined bullying roles in further analysis.

Involvement in bullying might be associated with engagement in risky activities among adolescents. In psychology, *Problem Behavior Theory* (PBT) developed by Jessor and Jessor [17] states that the presence of one form of problem or risky activity increases the likelihood of the occurrence of another. At present, several studies found problem behaviors such as substance abuse, aggressive behavior, delinquency, vandalism, sexual risk behavior, injury and suicidal ideation to be intertwined, and to co-vary which increases the risk for a negative development [18–23]. Further, adolescents who are engaged in several forms of risky behavior also show higher risks of becoming a part of a deviant peer

group, where these behaviors might be more accepted and prevalent that often culminates in further conflicts with the environment [18].

For bullying roles, the involvement in risky online activities (*i.e.*, compulsive Internet use, sexting and online grooming victimization) and risky offline activities (*i.e.*, problems with teachers, truancy and drinking alcohol) might differ greatly within and between traditional, cyber and combined bullying typologies. To enhance our understanding about similarities and differences between traditional and cyber bullying, it is important to understand whether differing roles share the same pattern of potentially risky online and offline activities.

1.1. Risky Online Activities

1.1.1. Compulsive Internet Use

Compulsive Internet Use (CIU) is also known as Internet Addiction or Excessive Internet behavior. It is usually defined by four characteristics: (1) a loss of sense of time or a neglect of basic drives and needs; (2) withdrawal, involving feelings of anger, anxiety, and/or depression when the Internet is not accessible; (3) an increasing need for more hours of use; and (4) negative psychological and social consequences, *e.g.*, disputes, lying, lower school achievement, social isolation [24,25].

Associations between CIU and bullying involvement can be explained as followed: On one side, some victims/cybervictims could try to cope with negative experiences by compulsive use of ICTs. Hence, the victims could try to search for a safer place online where they cannot be assaulted directly (*i.e.*, hit physically) and where they can try to be another person and meet new people who are not aware of their victim status. In addition, victims/cybervictims could lose the sense of an appropriate use of ICT and self-control while searching the Internet for new compromising material spread by the perpetrators or to assure that there is no new defaming material posted and shared. This insecurity could lead to a loss of appropriate use of ICTs and might increase the risk for CIU. On the other side, bullies/cyberbullies could also show a higher risk for CIU, since both phenomena share common risk factors like high impulsivity and low self-control [26–28]. Some research observed elevated scores of aggression and a greater irritability as a consequence of CIU involvement [25,29], which could raise the risk for problems with peers and result in bullying as a coping strategy. Within this line of thinking, CIU might be related to intrapersonal conflicts (in regard to the own feelings and well-being) and to interpersonal conflicts (in regard to social relationships) [28].

Previous empirical findings concerning the associations between CIU and involvement in bullying and cyberbullying are mixed and focus on cyberbullying and not traditional bullying. While one study found CIU to be associated with cybervictimization but not cyberbullying [30], another study stated the opposite: CIU was not associated with cybervictimization but was related to cyberbullying [31]. In a comparison of the associations between CIU and various cyberbullying roles, cyber bully-victims presented a higher level of engagement than pure cyberbullies and cybervictims [30]. Whether CIU is associated with other roles like traditional bully-victims and combined bullying roles remains contemplated and unanswered yet. In the current study, we will pay attention in more detail to the intra- und interpersonal conflicts due to CIU associated with varying bullying roles.

1.1.2. Online Grooming

Online grooming (or cybergrooming) can be defined as a process of manipulation, rapport building, deception and misuse of trust by which a significantly older offender prepares sexual abuse of a minor by the means of ICTs [32,33]. Until now, only very few studies investigated the associations between bullying and online grooming. However, some research was conducted on the associations between unhealthy romantic relationships, sexual harassment and traditional bullying involvement.

Previous research indicates that bullies might be at higher risk of falling victim to online grooming. For instance, in one study, with a sample of 1758 students in Grades 5 through 8, bullies reported to start dating earlier, appeared to be highly relationship oriented and reported more advanced pubertal development [34]. These characteristics may be similar in the online context, *i.e.*, talking with strangers about sexual topics, the willingness to have sexual contacts and form relationships online. Especially, the relationship orientation of the bullies might favor the frequently applied strategy of online groomers who build rapport with their victims prior to sexual abuse [33]. However, being a bully could not only be seen as a risk factor for online grooming victimization but also a consequence. Some bullies might choose to bully others as an inappropriate coping strategy to overcome experiences of abuse [35].

Research shows that victims of traditional and cyber bullying are more likely to become a victim of online grooming [36,37]. This can be explained by several factors: First, victims of bullying face serious social problems (*i.e.*, lack of good peer relationships, more frequently rejected by their peers and more often excluded from peer-to-peer activities) [14,38]. Online groomers might take advantage of this poor social situation of bullying victims by faking friendships and exploiting the natural need for attention and affection [33]. Consistent with this, some research found that cybervictims more often flirt online with unknown people [39]. Second, victims of bullying/cyberbullying might share certain risk factors with victims of online grooming which might partially explain the co-occurrence of both phenomena. Both victims of bullying and victims of online grooming have relatively low self-esteem, high impulsivity, increased sexual risk behavior and risky online behavior (disclosing private information about phone number, instant messenger id *etc.*) in comparison with non-victims [32,33,39].

Some research suggests that bully-victims show even more risk for sexual harassment. For instance, in a study with 684 middle and high school students, bully-victims reported more physical dating violence victimization than pure bullies, pure victims or uninvolved students and more emotional abuse in dating relationships than uninvolved students or pure victims. Bully-victims and victims also reported the highest amount of sexual peer harassment [2].

However, no study investigated the associations of online grooming with varying bullying roles like bully-victims or combined roles yet. Particularly, combined roles who are facing peer problems online and offline might show higher risk of falling victim to online grooming as cyber or traditional roles.

1.1.3. Sexting

Receiving and sending of sexually explicit messages or nude, semi-nude selfies (digital images of one's self), videos or texts via ICTs, is usually defined as sexting [40,41]. There are a variety of reasons why adolescents engage in sexting. Some adolescents want to show off in front of their friends by forwarding nude pictures of their girlfriends or boyfriends. Others share nude pictures to prove

commitment as a part of or instead of face-to-face sexual activities and yet others try to entice a prospective girlfriend or boyfriend by sending so-called sexts [41].

However, sometimes sexts are also used to embarrass or humiliate someone and can lead to social isolation. Dake and colleagues [40] described the associations between cyberbullying and sexting as two phenomena with blurred lines. The authors emphasize the voluntariness of the act and the intent to harm as main distinguishing characteristics between sexting and cyberbullying. While sexts are generally sent voluntarily, they might be misused in cyberbullying to cause harm to the sender by being forwarded to persons who were not supposed to receive them. Indeed, Dake and colleagues [40] found traditional and cyber victims more likely to be engaged in sexting. However, until now, no study has investigated whether different bullying roles tend to send or receive sexual messages via ICT more likely.

1.2. Risky Offline Activities

Involvement in both traditional and cyber bullying seems to be associated with a variety of risky offline activities. Traditional bullies, victims and bully-victims were found to show an increased risk of school-related behavioral problems like frequent truancy and trouble with teachers [42,43]. A number of studies also inferred that bullies and victims were more likely to frequently engage in drinking alcohol than non-involved adolescents [44–46]. Olweus [1] stated that both bullies and bully-victims, once grown-up, showed clearly higher risks of engaging in alcohol abuse. Other studies showed that cyberbullies as well as cybervictims showed increased levels of several risky offline activities including *i.e.*, truancy, fighting, and the consumption of alcohol [47]. More recently, a longitudinal study indicated that substance use predicted cybervictimization and that cyber bully-victims show higher risk for substance abuse as cyberbullies or cybervictims [30]. However, the associations between risky offline activities and combined bullying roles were not thoroughly investigated until now.

1.3. Socio-Demographics

Although age and sex are commonly investigated covariates in traditional and cyber bullying, research on the associations is not conclusive. While some studies report that there are no age differences in traditional and cyber bullying [48,49], other studies indicate that both decline with increasing age. Tokunaga [6] argues, on the basis of a literature review, that the occurrence of both traditional and cyber bullying seems to follow a curvilinear development whereby cyberbullying seems to peak during the 7th and 8th grade while traditional bullying is expected to peak slightly earlier. In accordance with this, Khoury-Kassabri [50] states that with increasing age certain forms of aggressive behaviors (e.g., traditional bullying) decrease whereas other forms that might occur outside of school (e.g., cyberbullying) might increase with older age adolescents.

In traditional bullying, bullies and bully-victims tend to be male, particularly in physical bullying, whereas victims tend to be more often female [16,44,51]. The role sex plays in cyberbullying has varied considerably between studies and still remains unclear. In some studies, no significant sex differences in cyberbullies, cybervictims and/or cyber bully-victims were found [49,52]; other studies reported that more boys were found to be involved as cyberbullies [44,51], or indicated that girls are more often found to be involved as cybervictims [16,44,53], or *vice versa* [54]. In cyber bully-victims,

the results are also mixed. Some studies reported that boys were significantly more often cyber bully-victims [16,44,53,54] and other studies found girls to be more often cyber bully-victims [55]. Only very few studies have focused on sex differences in combined roles (traditional and cyber). While some studies did not find any sex differences [9], other reported that boys tend to be more often combined bullies [8,11], and yet others found combined victims and combined bully-victims more frequently to be girls [16].

The vast majority of studies on traditional and cyber bullying were carried out in Western countries, especially Europe, North America, and Australia. Fewer studies were conducted in Japan, South Korea and China [56]. Studies about traditional and cyber bullying in Southeast Asian countries like Thailand are very scarce. Sittichai and Smith [56] stated in a literature review on bullying in Thailand that studies were mainly qualitative, and did not consistently distinguish bullying from general aggression. Consequently, there is a need for studies that investigate traditional and cyber bullying among Thai adolescents and a need for cross-national comparison between Western and Southeast Asian countries.

In sum, the inconsistent findings on sex differences and gaps in bullying research among Thai adolescents suggest strong arguments for including socio-demographics as control variables in further analysis.

2. The Present Study

Various risky online and offline activities with regards to traditional and cyber bullying roles were investigated, but the same is not true for risky online activities like CIU, online grooming and sexting. Further, most bullying studies focused on comparison between traditional and cyber roles, but fewer have included cyber or traditional bully-victims and even less included combined bullying roles. Building on the findings of previous research, this study aimed to make a comparative analysis of online and offline correlates in traditional, cyber and combined bullying roles in order to understand bullying involvement in a broader context of problem behavior both online and offline.

In the present study, we investigated two research questions: First, how many adolescents can be categorized as involved in traditional, cyber and combined bullying in the present sample? Second, are risky online and offline activities associated with involvement in traditional, cyber and combined bullying roles?

3. Method

3.1. Participants

A total of 2004 adolescents from three secondary schools in Germany, three secondary schools from the Netherlands and one school from Thailand were recruited as a convenience sample. Questionnaires were screened for containing several illogic responses, extremely one-sided response patterns, consistently filling in the extremes or with many questions unanswered. Overall, 76 questionnaires were identified based on those criteria; this corresponds to 3.7% of the data. We decided to remove those questionnaires, because according to Tabachnick and Fidell [57], if missing data represent less than 5% of the total sample “almost any procedure for handling missing values yields similar results” (p. 63). The final sample consisted of 1928 adolescents aged between 11 and 18 years ($M = 14.52$;

SD = 1.6). The sex distribution was 866 (44.9%) boys and 1062 (55.1%) girls. Distribution across countries was Germany 849 (44.3%), the Netherlands 379 (19.8%) and Thailand 700 (35.8%). Table 1 shows the distribution of participants by age, sex and country.

Table 1. Frequencies by age, sex and country ($N = 1925$ *).

Age	Sex	German		Dutch		Thai		Total	
		<i>n</i>	%	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
11 + 12	Boys	39	2.0	19	1.0	36	1.8	94	4.8
	Girls	43	2.2	13	1.4	64	3.3	120	6.9
13	Boys	94	4.8	51	2.6	34	1.7	179	9.1
	Girls	93	4.8	30	1.5	66	3.4	189	9.7
14	Boys	104	5.4	30	1.5	34	1.7	168	8.6
	Girls	123	6.3	26	1.3	66	3.4	215	11.0
15	Boys	121	6.2	63	3.2	35	1.8	219	11.2
	Girls	112	5.8	51	2.6	65	3.3	228	11.7
16	Boys	44	2.2	28	1.4	40	2.0	112	5.6
	Girls	44	2.2	28	1.4	60	3.1	132	6.7
17 + 18	Boys	12	1.6	23	1.1	46	2.3	81	5.0
	Girls	17	0.8	17	0.8	154	8.0	188	9.6
Total		846	44.3	379	19.8	700	35.8	1925	100

* Discrepancy between total and sample size is due to missing data ($n = 3$) for age in the German sample.

3.2. Procedure

The study was conducted in schools in Germany and the Netherlands in the summer of 2013 and in Thailand in the autumn of 2013, during normal school time. In Germany and the Netherlands, the data were collected by an online survey that transcribes the results into a file that can be exported to SPSS. Due to technical considerations in Thailand, the data was collected by paper-pencil-questionnaires.

The data protection officer and educational authority of the federal state of Lower Saxony, Germany, approved this procedure (OS 1 R.24-0541/2 N). As the adolescents were underage, parents had to sign a written consent form allowing them to participate.

In all countries, adolescents were explained why the present study was being conducted and how they could contribute. Adolescents were told that partaking in the study was optional, questions could be skipped and participation in the survey could be stopped at any time, without the need for giving a reason and without fear of negative consequences. The average time needed to complete the questionnaire was about 30 min. About 95% of eligible pupils participated in the study.

3.3. Measures

3.3.1. Traditional and Cyber Bullying

The Mobbing Questionnaire for Students by Jäger, Fischer and Riebel [58] was applied to measure bullying and cyberbullying involvement, using a reference period of within the last 12 months. The questionnaire starts with a definition of traditional bullying which includes the three central

characteristics (imbalance of power, repetition of the acts and intention to hurt) mentioned by Olweus [13]. Traditional bullying was measured with each one global item for traditional bullying and traditional victimization in reference to Olweus [1]. Regarding the victim, the following question was asked: “How many times have you been bullied in the last twelve months?” and for the perpetrators’ side “How many times have you bullied others in the last twelve months?”

Then cyberbullying was explained in the same way like traditional bullying but including the use of ICTs. Cyberbullying was measured with two global items by asking about victimization “How many times have you been cyberbullied in the last twelve months?” and about perpetration “How many times have you cyberbullied others in the last twelve months?” The answers, for both traditional and cyberbullying, could be given on a five-point ordinal scale (1–5), (“Never”, “Once or twice”, “Twice or thrice a month”, “About once a week” or “Several times a week”).

3.3.2. Compulsive Internet Use

To assess CIU, the Internet-Related Experiences Questionnaire developed by Beranuy, Chamarro, Graner, and Carbonell-Sánchez [59] was used. This scale consists of 10 items and comprises two subscales with each five items. The first subscale reflects intrapersonal conflicts caused by compulsive use of ICT including items like “When you are not connected to the Internet do you feel nervous or worried?” “Do you get angry or irritated when someone distracts you while you are connected?” and “How often do you stop your regular activities to spend more time on the Internet?” The second subscale addresses interpersonal conflicts caused by compulsive use of ICT and include items like “Do you find it easier or more comfortable to relate to people via Internet than face-to-face?” and “How often do you make new friends online?” All items using a four-point ordinal scale (1–4), with response options of “never”, “rarely”, “sometimes”, “often”. Casas *et al.* [60] validated the Internet-Related Experiences Questionnaire with a sample of Spanish adolescents. The authors confirmed a two factors structure. An intrapersonal factor (CIU INTRA) measures psychological or emotional ICT-related problems while the interpersonal factor (CIU INTER) reflects ICT-related social problems. They obtained for the total scale reliabilities of $\alpha = 0.79$, with $\alpha = 0.72$ for the Intrapersonal Factor and $\alpha = 0.64$ for the Interpersonal Factor. In this study, acceptable reliabilities were found for the total scale $\alpha = 0.81$, the Intrapersonal Factor $\alpha = 0.75$, and the Interpersonal Factor $\alpha = 0.67$.

3.3.3. Online Grooming

In order to improve the validity of responses, adolescents were given a definition of online grooming. This definition was based on a literature review and was already applied in a previous study [36]:

“A cybergroomer is a person who is at least 7 years older than you and whom you have known for a long period exclusively through online communication. At the beginning, the cybergroomer seems to be interested in your daily life problems, but after a certain time s/he appears to be interested in sexual topics and in the exchange of sexual fantasies and/or nude material (pictures or video chats)”.

There is no validated scale for the assessment of online grooming. In the present study, one single item was used. Adolescents were asked “How many times did you have contact with a

cybergroomer in the last twelve months?” by utilizing a five-point ordinal scale with the same answer options as in bullying.

3.3.4. Sexting

Sexting was assessed with two single items in reference to Hinduja and Patchin [61] by asking “How often did you receive naked or semi-naked pictures via ICTs from others in the last 12 months?” and “How often did you send naked or semi-naked pictures of yourself to others via ICTs in the last 12 months?”, with response options of “never”, “once or twice”, “monthly”, “weekly”, and “daily”.

3.3.5. Risky Offline Activities

To assess facets of risky offline activities, three items were used (adapted from Currie *et al.* [62]). Adolescents should state how many times they made experiences with potential risky offline activities: “Been in trouble with my teacher for bad behavior”, “Missed school lessons without my parents knowing”, and “Had so much alcohol that you got really drunk” with answer options from never to several times a week (1–5). The reliability for the scale was acceptable [57,63] with $\alpha = 0.735$. In order to disprove unequal weighting of these three items a Principal Component Analysis (PCA) was carried out. All items loaded well on one component (0.806; 0.823; 0.808) (eigenvalue 1). That is, an unequal weighting of the individual items was not indicated. It was mentioned explicitly to the participants that the item “Been in trouble with my teacher for bad behavior” was not about online behavior.

3.3.6. Demographics

Questions regarding age, sex, and country of the adolescents assessed socio-demographics.

3.4. Translation Procedure

The translation procedure was uniformly regulated, using the following steps recommended by Sousa and Rojjanasrirat [64]: First, the authors translated the original items into each of the required languages, and then a bilingual person who had not seen the original items before reviewed the translation. The Cronbachs’ Alpha measures showed good to adequate internal reliability compared by country (see Table 2).

Table 2. Internal consistencies in cross-national comparison ($N = 1925$).

Instrument	Number of Items	GER	DUT	THAI
CIU (total)	10	0.842	0.805	0.797
CIU INTRA	5	0.745	0.737	0.641
CIU INTER	5	0.706	0.624	0.754
Risky offline activities	3	0.670	0.801	0.777

3.5. Analytical Approach

Analyses consisted of two steps: descriptive statistics and multinomial logistic regressions. Descriptive statistics were used to determine the frequency rates of bullying roles in the present sample.

Pearson's correlational analysis was applied to describe bivariate associations between the study variables. Pearson's Chi-squared test was used to assess the bivariate associations between the bullying typologies and sex and country. Cramer's V was used to calculate the effect size.

In order to continue former bullying research that used the categorical approach [7,8,11,14,16], embrace the skewed distributions, and allow comparison of distinct risk factors of several bullying roles, we treated the bullying items as categorical and applied logistic regressions. In this way, we accepted loss of statistical power but avoided biased parameter estimates due to non-normal deviated outcomes [57,63].

Logistic regression models were used to compare different typologies (traditional, cyber and combined) in relation to risky online activities and risky offline activities. We collapsed the bullying/victimization and cyberbullying/cybervictimization variables into polynomial variables with mutually distinctive categories, in order to enable the identification of group differences concerning several independent variables. As a lower-bound cutoff point for classifying adolescents as involved in bullying, we used "two or three times a month" which was recommended by previous research to identify real group differences, considering that bullying occurs repeatedly [13,65]. Consequently, adolescents who scored less than "two or three times a month" (1–2) were classified as not involved, while adolescents who scored about "two or three times a month" or more often (3–5) were classified as bullies or victims and adolescents who reported on both (bullying and victimization) higher than "two or three times a month" were labeled as bully-victims. Under this procedure, we built the following three typologies basing on previous findings in bullying research [8,9,11,53]: Traditional typology: bully, victim, bully-victim, non-involved; cyber typology: cyberbully, cybervictim, cyber bully-victim, non-involved; combined typology: combined bully, combined victim, combined bully-victim and non-involved.

We chose multinomial regression analysis since this procedure allows more than two discrete outcomes. For each of the bullying typologies, one multinomial logistic regression was performed with one bullying typology as the outcome (non-involved as the reference category), and with CIU, online grooming victimization, sexting, and risky offline activities as independent variables and socio-demographics (age, sex and country) as control variables.

Before applying multinomial regression analysis, we checked the data for two essential assumptions: outliers and multicollinearity [57,63,66]. Univariate outliers in all ordinal independent variables were winsorized by replacing values beyond the 5th and 95th percentile by exactly these values in order to reduce the effect of possibly spurious outliers. If they were just dropped, the calculations would lose too much of the potentially valuable information. Since multicollinearity between predictors reduces the probability to assess the individual importance of a predictor, correlations among the winsorized predictors were estimated and evaluated in order to examine multicollinearity before conducting the multinomial logistic regression analysis (see Table 3). The correlation matrix indicated that the data were suitable for consideration as independent variables in a multinomial regression analysis since no high correlations (>0.07) could be detected [63,66]. Further, Table 3 shows the four dependent bullying variables.

Table 3. Correlation matrix of all variables used in this study ($N = 1925$).

	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.
1. CIU INTRA	0.508 **	0.199 **	0.132 **	0.151 **	0.215 **	0.090 **	0.116 **	0.090 **	0.172 **	0.151 **	0.215 **	0.198 **
2. CIU INTER	1	0.169 **	0.066 **	0.256 **	0.123 **	0.130 **	0.192 **	0.393 **	0.190 **	0.204 **	0.235 **	0.284 **
3. Receiving of sexts		1	0.290 **	0.169 **	0.375 **	-0.120 **	0.132 **	-0.029	0.258 **	0.027	0.273 **	0.102 **
4. Sending of sexts			1	0.162 **	0.194 **	-0.092 **	0.027	-0.030	0.155 **	0.045 *	0.200 **	0.103 **
5. Online grooming				1	0.101 **	0.085 **	0.068 **	0.308 **	0.100 **	0.172 **	0.207 **	0.308 **
6. Risky offline activities					1	-0.127 **	0.208 **	-0.136 **	0.349 **	0.084 **	0.278 **	0.111 **
7. Sex						1	0.075 **	0.190 **	-0.133 **	0.071 **	-0.059 *	0.059 **
8. Age							1	0.139 **	-0.022	-0.074 **	0.059 **	-0.039
9. Country								1	0.011	0.207 **	-0.080 **	0.283 **
10. Bullying									1	0.285 **	0.469 **	0.165 **
11. Victimization										1	0.167 **	0.375 **
12. Cyberbullying											1	0.370 **
13. Cybervictimization												1

Note: * $p < 0.05$, ** $p < 0.01$.

3.6. Control Variables

In all regression analyses, age, sex and country were included as control variables.

4. Results

4.1. Frequency Rates of Traditional, Cyber and Combined Bullying

To address our first research question regarding the frequency of traditional, cyber and combined bullying in the sample, Table 4 provides frequency rates of bullies, victims, bully-victims and non-involved categorized by lenient cut off (at least “two or three times a month”) in total, by country and by sex. The frequency rates compared by country revealed some statistically significant differences. In traditional bullying, fewer Thai adolescents were non-involved, more German adolescents were bullies, more Thai adolescents were victims and bully-victims, $\chi^2(6, 1900) = 68.1$, $p < 0.0001$, Cramer’s $V = 0.134$. In cyberbullying, less Thais were non-involved, more Thais were cyber-victims and cyber bully-victims $\chi^2(6, 1925) = 145.4$, $p < 0.0001$, Cramer’s $V = 0.194$. In combined bullying, Thai adolescents were rather frequently non-involved and more likely combined victims and combined bully-victims, $\chi^2(6, 1604) = 89.2$, $p < 0.0001$, Cramer’s $V = 0.167$.

Differences in the sex composition of the traditional bullying roles were statistically significant, $\chi^2(3, 1900) = 31.0$, $p < 0.0001$, Cramer’s $V = 0.128$, suggesting that boys were more likely than girls to be bullies and girls more likely than boys victims. Significant sex differences were also observed for cyberbullying roles, $\chi^2(3, 1925) = 19.3$, $p < 0.0001$, Cramer’s $V = 0.100$, suggesting that boys were more likely than girls to be cyberbullies and girls were more likely than boys to be cybervictims. Significant sex differences were also found for combined bullying roles, $\chi^2(3, 1604) = 18.0$, $p < 0.0001$, Cramer’s $V = 0.106$, suggesting that boys were more likely than girls to be combined bullies and girls were more likely to be combined victims.

4.2. Associations between Bullying and Risky Online and Offline Activities

To investigate our second research question, whether risky online activities (CIU, online grooming victimization and sexting) and risky offline activities (problems with teachers, truancy and alcohol drinking) are associated with involvement in traditional, cyber and combined bullying roles, multinomial logistic regressions were performed for each of the three bullying typologies: traditional (Table 5), cyber (Table 6), and combined bullying (Table 7). In each of the three multinomial logistic regressions, the bullying typology was the outcome variable, with the non-involved as the reference category, and with risky online and risky offline activities as independent variables and age, sex and country as control variables.

Table 4. Frequency rates of bullies, victims, bully-victims, and non-involved in each typology by country and sex.

Category	Total		German		Dutch		Thai		Male		Female	
	N	%	N	%	N	%	N	%	N	%	N	%
Traditional Typology												
Bully	97	5.1	56	6.7 ***	15	4.1	26	3.7	66	7.8 ***	31	1.6
Victim	184	9.7	55	6.6	22	6.0	107	15.4 ***	62	7.3	122	11.6 ***
Bully-Victim	63	3.3	14	1.7	14	1.7	39	5.6 ***	31	3.7	32	3.0
Non-involved	1556	81.9	711	85.0	320	88.2	525	75.3 ***	689	81.2	867	83.8
Cyber Typology												
Cyberbully	63	3.3	37	4.4	10	2.6	16	2.3	39	4.5 ***	24	2.3
Cybervictim	146	7.6	29	3.4	12	3.2	105	15.1 ***	47	5.4	99	9.3 ***
Cyber bully-victim	60	2.4	9	1.1	4	1.1	47	6.7	33	3.8	27	2.5
Non-involved	1656	86.7	774	91.1	353	93.1	529	75.9 ***	745	86.3	911	85.9
Combined Typology												
Combined bully	38	2.4	20	2.1	7	1.9	11	2.0	28	3.9 ***	10	1.1
Combined victim	91	5.7	17	1.8	6	1.6	68	12.2 ***	30	4.2	61	6.9 ***
Combined Bully-Victim	29	1.8	4	1.5	5	1.1	20	3.6 ***	15	2.1	14	1.6
Non-involved	1446	90.1	678	94.5	329	96.2	556	82.4 ***	642	89.8	804	90.4

Note: Roles were classified by cut-off value from at least “twice or thrice a month”. *** $p < 0.001$.

Table 5. Multinomial logistic regression analysis for variables predicting involvement in traditional bullying.

	B	O.R.	C.I. 95%
Pure Bully			
CIU INTRA	0.149	1.1	0.779–1.7
CIU INTER	0.684 **	1.9	1.3–2.9
Online Grooming	0.137	1.1	1.0–1.4
Receiving of Sexts	0.212 **	1.3	1.0–1.4
Sending of Sexts	−0.310	0.733	0.397–1.3
Risky offline activities	1.0 **	2.9	2.0–3.9
Age ^a	−0.208 **	0.813	0.695–0.950
Sex (male) ^{a,b}	0.925 **	2.5	1.5–4.0
Dutch Adolescents ^{a,c}	−0.148	0.717	0.387–1.9
German Adolescents ^{a,c}	0.454	1.5	0.848–2.9
Pure Victim			
CIU INTRA	0.312 **	1.3	1.1–1.7
CIU INTER	0.269	1.1	1.2–2.4
Online Grooming	0.200	1.2	0.958–1.5
Receiving of Sexts	−0.090	0.914	0.773–1.0
Sending of Sexts	−0.127	0.881	0.474–1.6
Risky offline activities	0.483 **	1.6	1.2–2.1
Age ^a	−0.265 **	0.767	0.694–0.848
Sex (male) ^{a,b}	−0.885 **	0.413	0.215–0.791
Dutch Adolescents ^{a,c}	−0.919 **	0.399	0.232–0.687
German Adolescents ^{a,c}	−0.929 **	0.395	0.263–0.593
Pure Bully-Victim			
CIU INTRA	0.510 **	1.6	1.0–2.7
CIU INTER	0.577 **	1.7	1.1–2.8
Online Grooming	0.184	1.2	0.828–1.7
Receiving of Sexts	0.072	1.0	0.856–1.3
Sending of Sexts	0.357	1.4	0.623–3.2
Risky offline activities	0.997 ***	2.7	1.8–4.0
Age ^a	−0.353 **	0.703	0.593–0.833
Sex (male) ^{a,b}	0.230	1.2	0.100–0.459
Dutch Adolescents ^{a,c}	−1.4 **	0.225	0.105–0.482
German Adolescents ^{a,c}	−0.844 *	0.430	0.183–1.0

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; ^a control variable; ^b reference category: female sex; ^c reference category: Thai adolescents.

Table 6. Multinomial logistic regression analysis for variables predicting involvement in cyberbullying.

	B	O.R.	C.I. 95%
Pure Cyberbully			
CIU INTRA	0.059	1.0	0.649–1.7
CIU INTER	0.821 ***	2.2	1.4–3.6
Online grooming	−0.050	0.951	0.598–1.5
Receiving of Sexts	0.317 **	1.3	1.1–1.6
Sending of Sexts	0.867 **	2.3	1.1–4.7
Risky offline activities	0.794 **	2.2	1.4–3.2
Age ^a	0.020	0.980	0.810–1.1
Sex (male) ^{a,b}	0.634 *	1.8	1.0–3.3
Dutch Adolescents ^{a,c}	0.395	1.4	0.690–3.1
German Adolescents ^{a,c}	−0.176	0.839	0.309–2.2
Pure Cybervictim			
CIU INTRA	0.455 **	1.5	1.1–2.2
CIU INTER	0.333 **	1.3	1.0–1.8
Online grooming	0.264 **	1.3	1.0–1.6
Receiving of Sexts	0.036	1.0	0.872–1.3
Sending of Sexts	0.691 *	1.9	1.0–3.7
Risky offline activities	0.620 **	1.8	1.3–2.5
Age ^a	−0.312 ***	0.732	0.656–0.817
Sex (male) ^{a,b}	−0.303	0.738	0.497–1.0
Dutch Adolescents ^{a,c}	−1.7 ***	0.173	0.105–0.284
German Adolescents ^{a,c}	−1.6 ***	0.188	0.094–0.374
Pure Cyber bully-victim			
CIU INTRA	0.645 **	1.9	1.1–3.3
CIU INTER	1.2 ***	3.3	2.0–5.6
Online grooming	0.649 ***	1.9	1.3–2.7
Receiving of Sexts	0.077	1.0	0.850–1.3
Sending of Sexts	0.698	2.0	0.862–4.6
Risky offline activities	1.1 ***	2.7	1.7–4.2
Age ^a	−0.257 **	0.773	0.648–0.922
Sex (male) ^{a,b}	0.662 **	1.9	1.0–3.5
Dutch Adolescents ^{a,c}	−1.7 ***	0.176	0.073–0.425
German Adolescents ^{a,c}	−1.9 **	0.148	0.039–0.565

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; ^a control variable; ^b reference category: female sex; ^c reference category: Thai adolescents.

Table 7. Multinomial logistic regression analysis for variables predicting involvement in combined bullying.

	B	O.R.	C.I. 95%
Pure Combined Bully			
CIU INTRA	0.182	1.1	0.634–2.2
CIU INTER	1.4 ***	4.1	2.1–7.9
Online grooming	0.370	1.4	0.834–2.5
Receiving of Sexts	0.833 **	2.2	0.930–5.6
Sending of Sexts	0.330	1.6	1.0–1.8
Risky offline activities	1.1 ***	3.5	1.8–5.3
Age ^a	−0.269 **	0.764	0.594–7.8
Sex (male) ^{a,b}	1.2 **	3.4	1.5–6.3
Dutch Adolescents ^{a,c}	0.418	1.5	0.551–4.1
German Adolescents ^{a,c}	0.275	1.3	0.350–4.9
Pure Combined Victim			
CIU INTRA	0.449 **	1.5	1.0–2.3
CIU INTER	0.510 **	1.6	1.1–2.4
Online grooming	0.309 *	1.3	0.996–1.8
Receiving of Sexts	0.077	1.0	0.874–1.3
Sending of Sexts	0.587	1.7	0.776–4.1
Risky offline activities	1.1 ***	2.7	1.8–4.0
Age ^a	−0.427 **	0.652	0.564–0.755
Sex (male) ^{a,b}	−0.300	0.741	0.449–1.2
Dutch Adolescents ^{a,c}	−1.8 ***	0.154	0.081–0.292
German Adolescents ^{a,c}	−1.9 ***	0.143	0.055–0.371
Pure Combined bully-victim			
CIU INTRA	0.966 **	2.6	1.1–6.1
CIU INTER	1.5 ***	4.8	2.0–11.1
Online grooming	0.206	1.2	0.686–2.2
Receiving of Sexts	−0.094	0.910	0.610–1.3
Sending of Sexts	1.4 **	4.2	1.1–15.9
Risky offline activities	1.4 ***	4.2	1.1–8.6
Age ^a	−0.429 **	0.651	0.487–0.870
Sex (male) ^{a,b}	0.099	1.1	0.422–2.8
Dutch Adolescents ^{a,c}	−2.2 **	0.102	0.024–0.438
German Adolescents ^{a,c}	−1.2	0.286	0.048–0.438

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$; ^a control variable; ^b reference category: female sex; ^c reference category: Thai adolescents.

Model 1 (traditional typology) was significant, Log likelihood (null) = 2139.319; LR (full) = 1824.38; LR $\chi^2 = 314.80$, $df = 30$, $p < 0.001$, Nagelkerke's $R^2 = 0.210$. Table 5 shows that adolescents who scored high on the intrapersonal factor of CIU had an increased risk of being a victim or bully-victim and that adolescents who reported higher scores on the interpersonal factor of CIU

showed a higher likelihood of being a bully or bully-victim. Further, adolescents who reported receiving sexts were more likely to be bullies. Risky offline activities were associated with being a bully, victim and bully-victim. With increasing age, the occurrence of being a bully, victim and bully-victim seems to decrease. Boys demonstrated a higher likelihood to be a bully and girls displayed an increased risk to be a victim. Dutch and German adolescents compared with Thai adolescents showed lower odds ratios to be a traditional victim or bully-victim.

Model 2 (cyber typology) was significant, Log likelihood (null) = 1844.16; LR (full) = 1422.36; LR $\chi^2 = 421.80$, $df = 30$, $p < 0.001$, and Nagelkerke's $R^2 = 0.301$. As Table 6 illustrates, adolescents who reported higher scores on the intrapersonal factor of CIU showed an increased likelihood to be a cybervictim and cyber bully-victim. Additionally, adolescents who reported higher scores on the interpersonal factor of CIU were more likely to be a cyberbully and cybervictim. Adolescents who reported receiving sexts displayed a higher risk to be a cyberbully. Adolescents who reported sending sexts demonstrated an increased likelihood to be a cyberbully and cybervictim. Adolescents who reported of victimization through online grooming showed higher odds ratios of being a cybervictim and cyber bully-victim. Risky offline activities were associated with playing all three cyber roles. With increasing age, the occurrence of cybervictims and cyber bully-victims seems to decrease. Boys were more likely to be a cyberbully or cyber bully-victim. German and Dutch adolescents showed a lower risk to be a cybervictim and cyber bully-victim compared with Thai adolescents.

Model 3 (combined typology) was significant, Log likelihood (null) = 1180.06; LR (full) = 854.72; LR $\chi^2 = 325.34$, $df = 30$, $p < 0.000$, and Nagelkerke's $R^2 = 0.336$. Table 7 shows that adolescents who reported higher scores on the intrapersonal factor of CIU showed higher odds ratios to be a combined bully-victim. Adolescents who reported higher scores on the interpersonal factor of CIU were more likely to be a combined bully and combined bully-victim. Adolescents who reported receiving sexts demonstrated an increased risk of being a combined bully and adolescents who reported sending sexts showed an increased likelihood to be a combined bully-victim. Online grooming victimization was associated with combined victimization only. Risky offline activities were related significantly to engagement as combined bully, victim and bully-victim. With increasing age the risk for being a combined bully, victim or bully-victim decreased. Boys were more likely to be a combined bully. Dutch and German adolescents showed a lower risk to be combined victims compared with Thai adolescents. Dutch adolescents showed lower odds ratios to be combined bully-victims compared with Thai adolescents.

5. Discussion

The purpose of this study was to report the occurrence of bullying roles in the present sample and to provide evidence on the associations between traditional, cyber and combined bullying and risky online activities (CIU, online grooming victimization, sexting), risky offline activities (problems with teachers, truancy, drinking alcohol). We used logistic multinomial regression analysis as a categorical approach for multivariate statistical analyses with bullying roles as outcome variables and risky online and offline activities as independent variables taking into account age, sex and country as control variables.

Concerning our first aim, to report the occurrence of traditional, cyber and combined bullying, we found 18.1% of adolescents were involved in traditional bullying, 13.3% of adolescents were involved in cyberbullying and 9.9% were involved in combined bullying. Comparing the results with Beckmann and colleagues [7], who used also global items for the assessment of bullying and cyber-bullying, we found clearly lower frequency rates in our study. One possible explanation for this might be that in the present study, a more strict lower-bound cutoff point for the categorization as in bullying involved was used (“Twice or thrice a month” vs. “Once or twice”). In line with Beckmann and colleagues [7], we found the group of victims in cyber and combined bullying to be the largest group, followed by bullies and bully-victims. While we found the same composition in traditional bullying, Beckmann and colleagues [7] found more traditional bullies than victims. In contrast to previous research, we obtained clearly lower rates of combined bully-victims in the present study [7,11].

The present study supports the idea that traditional bullying still occurs more frequently than cyberbullying [6–8,11,13]. However, the difference between traditional and cyber bullying found in the present study was smaller than as described by Smith [67]—A ratio of 4:1 or 3:1. One possible explanation for this might be that those statements are more applicable for Western than for Asian countries, probably because the vast majority of previous research on bullying has been carried out within Western populations [56]. Indeed, we found Thai adolescents were nearly as much involved in traditional bullying (24.7%) as in cyberbullying (24.1%). After controlling for age and sex, German and Dutch adolescents showed, in comparison with Thai adolescents, a lower risk being cyber victims, cyber bully-victims, combined victims and combined bully-victims. This is somewhat surprising, because Thai adolescents seem to have less access to ICT and use ICT less intensively compared with German and Dutch adolescents [68].

Besides country differences, the current study revealed differences by age and sex in the frequency rates of bullying. In accordance with previous studies (*i.e.*, [6]), we found bullying to decrease with increasing age. The only exceptions were cyberbullies: for this role no significant age differences were found. Also, in line with several authors, we observed associations between bullying and sex: In accordance with Gradinger *et al.* [8], we identified male sex—after controlling for age and country—as an important risk factor for involvement as bully, cyberbully and combined bully. Further, we found boys more likely to be cyber bully-victims and less likely to be traditional victims, which is also in line with some other research [16,44,53,54]. Although the present sample could not be considered as representative, this study constitutes in the literature one of the first comparative data sets about traditional, cyber and combined bullying among German, Dutch and Thai adolescents.

The second aim of the current study was to analyze whether risky online activities and risky offline activities were associated with involvement in traditional, cyber and combined bullying roles. We hypothesized those adolescents who report higher scores in risky online and offline activities display an increased likelihood to be involved in bullying. A comparison of the three regression models (traditional, cyber and combined bullying roles) revealed that the amount of variance explained by logistic regression models were acceptable for all three models (from 21% to 33%) [63]. However, the explained variance was slightly better for the cyber and combined typology. This means that the investigated variables are somewhat more useful in predicting involvement in cyber or combined bullying than traditional bullying.

Concerning risky online activities, the present study demonstrated that CIU was associated with all bullying roles. However, the association differed between either psychological (intrapersonal) or social conflicts (interpersonal) due to CIU or even both. Adolescents who were only facing psychological conflicts caused by CIU were more likely to be traditional victims. Adolescents who reported only of social conflicts due to CIU were more likely to be traditional, cyber or combined bullies. This suggests that it might be worth investigating common underlying risk factors (*i.e.*, high impulsivity, low self-control or greater irritability; elevated scores of aggressions), which might be an explanation for the co-occurrence of social conflicts caused by CIU and bullying perpetration. Adolescents who were facing both psychological and social conflicts caused by CIU were more likely to be traditional, cyber and combined bully-victims. This supports the statement from Olweus [1] that bully-victims unite social and psychological problem profiles. However, adolescents who were facing both were also more likely to be cyber and combined victims.

Casas and colleagues [31], who used the same instrument to measure CIU, also observed associations between CIU and cyberbullying. However, in contrast to Casas and colleagues [31] and in line with Gámez-Guadix *et al.* [30], this study revealed significant association between CIU and cybervictimization. Further, we observed associations between CIU and cyber bully-victims to be stronger compared with cybervictims, which is also consistent with previous research [30]. We add to the literature associations between CIU and combined bullying roles and found that combined bully-victims displayed, compared with all other roles, the strongest associations with both psychological and social conflicts caused by CIU, suggesting that combined bully-victims might be a special risk group.

Another risky online activity we investigated was online grooming victimization. The current study suggests no associations between online grooming victimization and traditional bullying. However, consistent with previous research, we found associations with cybervictimization [36,37] and add to the literature associations with combined victimization. Interestingly, victims of online grooming did not appear to be at higher risk of being traditional victims but showed a higher risk to be cybervictims and combined victims. This difference might be caused by common underlying ICT-related risk factors that might explain multiple online victimization. These might be a specific online behavior, *i.e.*, disclosing of private information on social networking sites, or disclosing of contact details like phone number, instant messenger id, or the willingness to flirt online and get in contact online with strangers. In line with previous research [2] that found bully-victims as a particular risk group for sexual harassment offline and physical dating violence victimization, we add to the literature that cyber bully-victims displayed higher risk of falling victim to online grooming. The finding that some adolescents experiencing victimization in both peer and sexual violence raises important questions, as well as concerns. Future studies should focus on these poly-victimized adolescents, how to make them more resilient, what harm is caused by the multiple exposures and which individual pathways of victimization could be identified.

A further risky online activity we addressed was sexting. With it, we found the receiving of sexts to be associated with being a traditional, cyber and combined bully only. Two possible explanations are offered. Firstly, it is hypothesized that bullies try to receive sexts from others to embarrass and humiliate the sender, *i.e.*, by forwarding the sexts to others who are not supposed to see the pictures. Secondly, bullies might use sexts more frequently for establishing relationships, to show off, to flirt

and to become sexually aroused [41]. In support of the second explanation, previous research showed that, bullies often start dating earlier and being highly relationship oriented [34]. However, the associations between sending of sexts and bullying roles differed; adolescents who reported more often sending of sexts were more likely to be a cyberbully, cybervictim and combined bully-victim. The sending of sexts was most strongly related to combined bully-victims and the receiving of sexts with combined bullies. The results support previous research that adolescents who were engaged in sexting were more likely to be involved in bullying [40] and extend the literature on associations between sexting and combined bullying. The findings point out the need to address sexting in anti-bullying prevention measurements as a tool of aggression and a risk for victimization.

Finally, we examined facets of risky offline activities (problems with teachers, truancy and alcohol drinking). The study demonstrates that risky offline activities have clear relevance to all kinds of bullying roles. There is a large literature that supports the thesis that various forms of risky and problem behaviors are interrelated [17,20,30,45,46]. More specific, we found risky offline activities were more strongly associated with combined bullying roles than with cyber or traditional roles. This result might indicate that the simultaneous involvement in both traditional and cyber bullying might have a bigger impact on engagement in risky offline activities than only the involvement in either cyber or traditional bullying which also has been reported by some earlier research [8,15].

5.1. Practical Implications

The finding that various risky online and offline activities appeared to be inter-correlated with traditional, cyber and combined bullying roles has some relevance for further prevention work. This result supports the need for more holistic prevention programs that aim to promote a positive youth development and contradict engagement in risky activities in a broader view. An example of a broad approach is “Life skills”. Life skills might play an important role here and help mitigate risks by focusing on resiliency against a wide variety of risky online and offline activities. The World Health Organization defines life-skills as “abilities for adaptive and positive behavior that enable individuals to deal effectively with the demands and challenges of everyday life” [69] (p. 1). Life-skills are loosely classified into three broad categories of skills: cognitive skills for analyzing and using information, personal skills for developing personal agency and managing oneself, and inter-personal skills for communicating and interacting effectively with others [70]. Thus, Life-Skills-Programs (LSPs) promote core life-skills (*i.e.*, participation, democracy beliefs, responsibility, self-esteem, empathy, coping strategies) instead of focusing only on reducing specific risks [71]. Consequently, LSP go beyond a harm-avoidance approach and strive to generate positive youth development.

Schools might possess the right learning environment to implement LSPs due to the variety of social interactions, the possibility to learn peer-to-peer, the crucial role of teachers as socialization agents for children and adolescents, and the compulsory school attendance that facilitates reaching most children and adolescents. These programs based on interactive processes (role play, theatre play, group work, relaxing and physical exercises) in the context of a resource-orientated curriculum [72]. Some of already implied and evaluated LSPs are Lions Quest [73] and Information + Psychosocial Competence = Protection (IPSY) [74]. Compared with prevention programs that only aim to reduce

risk, LSPs have been found to be the most effective programs to reduce problem behaviors among adolescents [70,72].

5.2. Limitations and Strengths

There were several limitations to this study. The cross-sectional nature of the survey limits the ability to make causal conclusions, so it is not possible to understand whether the correlates were antecedents or consequences. Longitudinal studies are needed to confirm the predictive effects of risky online and offline activities on involvement in traditional and cyber bullying, or *vice versa*. Further, all data relied exclusively on self-reports. Therefore, the correlates might be inflated through shared method variance. A multi-informant approach is recommended for future studies in order to overcome mono-method problems. In addition, we relied on single item measurement for the assessment of traditional and cyber bullying. Although there is some evidence for validity of the items for measuring bullying [13,65], future studies should try to include validated scales for both traditional and cyber bullying to overcome problems with single-items measurements (*i.e.*, degree of validity, accuracy, and reliability).

There is still controversy among researchers on whether bullying is best considered as categorical variable or continuous dimension. While some researchers apply the categorical approach by using specific cut-off points to classify between involved in bullying and not involved, others researchers are using continuous dimensions allowing several degrees of involvement [75]. Reasons for using the categorical approach are that bullying variables mostly do not meet assumptions of normality and are positively skewed [75,76]. In addition, cyberbullying does not occur very frequently in many studies, which makes dimensional approaches more problematic [75]. Due to various reasons (continuing former research, conceptual argument, skewed distributions of the outcomes, comparison of distinct risk factors) we treated the bullying variables as categorical in a multinomial regression analysis. However, more research is needed to find the most appropriate way to examine bullying [75,76]. Future research should replicate the results found in the current study by using a continuous approach and alternative units of analysis (latent-class analyses, mixed Rasch modeling or structural equation modeling) to come up to the multivariate association of bullying and risky online and offline activities.

Nevertheless, this study also has strength and extends the body of research in several ways. Firstly, we put forward conceptual and traditional arguments as to why adolescents become involved in bullying and gave an accurate definition of bullying participants. In addition, we used mutually exclusive roles of bullying that enabled establishing clear patterns of involvement and assessing the real correlates for involvement in various bullying roles, and, thus, this may enhance our knowledge in the planning of preventative work for specific target groups. Secondly, in contrast to this study, many studies on the correlates of cyberbullying have failed to account for groups like combined bullying roles. Finally, most of the research on bullying has been confined to Western populations. A major future issue might be to extend research to more non-Western populations and to undertake systematic, cross-national comparisons in order to capture what is general as well as what is cultural and idiosyncratic in adolescents' behavior and development and in their determinants. This aspect might be especially important in regard to development of prevention and intervention programs and the inter-cultural validity of such programs.

6. Conclusions

In summary, this study is one of the first comparing traditional, cyber and combined bullying in Western and South-East Asian countries. With it, we found Thai adolescents to be more frequently cyber victims, cyber bully-victims, combined victims and combined bully-victims and Thai adolescents nearly just as much involved in traditional bullying as in cyberbullying. We found also some sex differences; male adolescents tended to be more often traditional, cyber and combined bullies. This warrants that attention be paid to sex specific risk factors in bullying perpetration. We found also support for our hypothesis that risky online and offline activities are associated with involvement in traditional, cyber and combined bullying. CIU, sending of sexts and risky offline activities were most strongly associated with combined bully-victims. The receiving of sexts was most strongly associated with combined bullies and online grooming victimization was most strongly associated with cyber bully-victims. In addition, we found risky offline activities to be more strongly associated with combined bullying roles compared with traditional and cyber bullying roles. This result indicates how important it is to consider both traditional and cyber bullying roles simultaneously to identify special risk groups. Overall, the findings stress the need to move away from prevention programs that are designed to reduce specific risk behaviors and develop more integrated approaches that might help to develop life-skills in adolescents in order to be able to cope with a wide variety of risky online and offline activities.

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Author Contributions

Sebastian Wachs and Marianne Junger designed the study. Marianne Junger, Ruthaychonee Sittichai and Sebastian Wachs recruited participants and collected data. Sebastian Wachs performed the statistical analyses and drafted the manuscript. Marianne Junger and Ruthaychonee Sittichai provided constructive feedback on drafts of the manuscript. Sebastian Wachs processed all feedback from the other authors and reviewers. All authors read and approved of the final manuscript.

Conflicts of Interest

The authors declare no conflict of interest.

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