Family Climate, Perception of Academic Achievements, Peer Engagement in Cyberbullying, and Cyber Roles among Adolescents

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Abstract

Cyberbullying is a disturbing form of behavior associated with the use of communication technologies among adolescents. Many studies have been devoted to cyberbullies and cyber victims, neglecting an important growing group: cyberbullies who are also cyber victims. Moreover, few studies refer to all cyberbullying roles and factors associated with them. Therefore, the goal of this study is to examine differences in family climate, peers' engagement in cyberbullying, and perception of academic achievements among involvements in cyberbullying roles. Data are collected by telephone or face-to-face from a sample of 277 eleventh- to twelfth-grade students in Israel who are asked to participate in the survey. Cyberbullying roles are composed of two variables—cyberbullies and cyber victims, creating four groups: cyberbullies, cyber victims, cyberbullies-and-victims, and non-involved. Three types of family climate are measured: warmth, order and supervision, and conflict. Respondents report their perceptions of peers' engagement in cyberbullying. At the personal level, gender, perception of academic achievements, and school absence are measured. Multinomial logistic regression findings show that boys are more likely to be cyberbullies and cyberbullies-victims than are girls; family conflicts increase the odds of being cyberbullies and cyber victims; and family warmth decreases the odds of being cyber victims and cyberbullies-cyber victims. Perception of peers' engagement in cyberbullying increases the odds of being cyberbullies and cyberbullies-victims. Perception of academic achievements and school absence have opposite effects on cyber victims, the former increasing the odds of being cyber victims and the latter decreasing them. The results emphasize the role of family and peers in adolescents' cyber behavior. Limitations and conclusions are discussed.

Keywords Cyber victims · Cyberbullies-victims · Family conflicts · School absence · Supervision · Conflict

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1 Introduction

Online bullying is a well-known and widespread phenomenon that affects many children and adolescents around the world. Its detrimental influence and long-term adverse consequences have been documented by many scholars in the past twenty years. Some papers focus on cyber victims (Lee et al., 2021; Sasson & Mesch, 2016a; Ortega-Barón et al., 2016), associating cyber victimization with frustration, academic problems, social anxiety, depression, and emotional distress for the victims (Juvonen & Gross, 2008; Tokunaga, 2010). Other studies concentrate on cyberbullies (Sasson et al., 2022; Khan et al., 2020) and sort them into two types: those seeking social status and those going after vulnerable victims in order to exercise power and control (Khan et al., 2020). Cyberbullies are more likely to exhibit low satisfaction with family life, low self-esteem, problematic peer relations, and poor academic achievements (Livazović & Ham, 2019). Furthermore, due to the unique features of digital technology, a new group has emerged cyberbullies-victims (Mishna et al., 2012). Few studies, however, refer to this particular group as an object of investigation in itself or in comparison with the other groups, cyberbullies and cyber victims.

Searching for factors that may shed light on cyberbullying, some authors suggest the potential role of family for both online perpetrators and victims. Katz et al. (2019), for example, find that controlling parenting style and an inconsistent internet-mediation style associate with higher prevalence of adolescent involvement in cyberbullying as victims and perpetrators. Others suggest peers as an important influence group. During adolescence, friends become central in young adults' lives and when adolescents start to see themselves as part of the peer group, an influence on their attitudes, norms, and behaviors ensues (Sasson & Mesch, 2016b). On this topic, Sasson et al. (2022) find that adolescents who believe their peers are involved in cyberbullying perpetration tend to be more involved in such behavior themselves. Another possible determinant of online bullying is academic achievement, previous research having established its adverse impact on both cyberbullies and cyber victims.

Based on the aforementioned literature, the purpose of this study is to examine whether there are differences in family climate, perception of peers' engagement in cyberbullying, and perception of academic achievements among four groups of involvement in cyberbullying—cyberbullies-victims, cyberbullies, cyber victims, and the non-involved.

In this paper, a social-ecological conceptual framework that considers the interaction of factors at the levels of the individual, family, and peers via the online context is invoked. At the individual level, gender, perception of academic achievements, and school absence are included. At the family level, three types of family-climate concepts—warmth, order and supervision, and conflict—are included. At the peer level, perception of peers' involvement in cyberbullying is included. A sample of older adolescents (eleventh and twelfth graders) and data obtained from an online survey are used to investigate the combined contribution of these factors to the odds of becoming a victim, a bully, and a bully/victim of online bullying.

2 Literature Review

2.1 Cyberbullying Roles, Gender, and School Achievements

Most researchers agree that cyberbullying involves the use of electronic communication technologies to bully others (Kowalski et al., 2014). Cyberbullying has several unique characteristics such as anonymity, wide distribution, and reduced responsibility and accountability (Schneider et al., 2012). The rates of cyberbullying, as documented in systematic reviews in different countries, range from 20% to 57% (Brochado et al., 2017). Recent comprehensive research in nineteen European countries found rates of cyberbullies in ranges of 10%–20% among children aged 9–16 and a 23% average rate of cyber victims (Smahel et al., 2020). In Israel, 17% of students in grades 4–11 reported being cyberbullies and 27% reported being cyber victims (Heiman et al., 2014). Despite wide variations in rates of cyberbullying among countries, clearly this is a comprehensive and major phenomenon in the lives of children and adolescents worldwide that demands further exploration.

Differentiation among cyberbullying roles relies on the traditional bullying taxonomy and comprises four distinct groups—bullies, victims, bullies-victims, and non-involved. In traditional bullying, the bully-victim category represents the smallest and most vulnerable group (Mishna et al., 2012). However, the unique features of the virtual digital environment (potential anonymity, distance that mitigates inhibitions and empathy, lack of dependence on time and space, ease of operation, and wide distribution) allow children who avoid traditional bullying to take part in cyberbullying (Tokunaga, 2010). In fact, these conditions make it possible for victims to become online perpetrators and act in a way that they would not dare to do face-to-face (Beluga et al., 2017), growing the cyberbully-victim category substantially. Mishna et al. (2012), for instance, found that 26% of the participants in their study were cyberbullies-victims and were more likely to be perpetrators toward peers. Li (2007) argued that the cyberbully-victim phenomenon derives from belonging to an active social group whose members regularly harass each other (Li 2007). Considering the relevance of this role for adolescents' online behavior and the limited knowledge about this particular group, the current study explores the family and peer characteristics of cyberbullies-victims as an additional cyberbullying role group.

The research literature presents mixed findings on gender involvement in cyberbullying. Some studies show that boys are more involved as cyberbullies than are girls (Heiman & Olenik-Shemesh, 2015; Hinduja & Patchin, 2013; Bayraktar et al., 2015) and that girls are more involved as cyber victims than are boys (Sasson & Mesch, 2016a; Zych et al., 2016; Bayraktar et al., 2015). Park et al. (2021) reinforce these findings in their systematic review of East Asian countries, reporting higher rates of cyberbullying perpetration among males than among females. Yet they also find evidence of higher rates of cyber victimization among males than among females, contradicting other studies. Kowalski and Limber (2013) find girls more likely to be cyberbullies than boys because of their tendency to rely on more indirect forms of aggression. Other studies that analyze the prevalence of cyberbullies-victims present contradictory findings. In a comprehensive study among 1,062 Spanish adolescents, Buelga et al. (2017) find girls overrepresented in the cyberbully-victim

group. Cuadrado-Gordillo and Fernández-Antelo (2014) report the opposite: a higher percentage of boys in the cyberbully-victim group. One explanation of the latter finding is that boys are likely to spend more time playing cyber games and, therefore, are potentially at higher risk of being bullied and have more opportunities to become perpetrators (Chang et al., 2015).

As for the impact of cyberbullying on academic achievements, it has been found that an unhealthy school environment, such as one with high levels of bullying, has an adverse impact on students' academic performance (Strøm et al., 2013). Kowalski and Limber (2013) report that academic achievements are adversely affected by traditional bullying forms and cyber bullying. Rothaon et al. (2011) find bullied students more likely to underperform students who are not bullied. According to Charoenwanit (2019), cyberbullying victims and cyberbullies have severe academic achievement problems including school absence, skipping classes, and poor achievement. Similarly, Guo et al. (2021) find that students with lower perceived academic performance are more likely than others to be involved in cyberbullying as bullies. In sum, the findings of scholarship are inconclusive about gender differences in cyber roles but conclusive about the correlation between cyberbullying and academic achievements for both cyberbullies and cyber victims.

2.2 Peers' Influence on Cyberbullying

Ajzen's (1991) theory of planned behavior (TPB) offers a general model that has been proven effective in predicting a variety of behaviors including risky online behaviors (Sasson & Mesch, 2016a). According to the TPB, all behaviors are planned, meaning that individuals consider the potential consequences of their activities before they decide to act. This decision process involves an assessment of the behavior based on relevant factors (attitudes, subjective norms, and perceived behavior control) and their combination determines the intention to engage in the behavior, which is the only antecedent to the behavior (Ajzen, 1991). Attitudes toward the behavior denote beliefs that people hold (Heirman & Walrave, 2012). "Perceived behavioral control" refers to individuals' perceptions about the ease or difficulty of engaging in a particular behavior, which derives from their belief in their ability to control this behavior (Ajzen, 1991) and subjective norms refers to the extent to which individuals' significant others (i.e., friends) are involved in the behavior themselves. According to Hinduja and Patchin (2013), for example, adolescents who reported that many of their friends bullied others using technological means were more likely to harass their friends themselves. In another study, conducted among 1,042 Belgian students aged 12–18, it was found that students in classes with lower levels of pro-victim attitudes cyberbullied more, above and beyond the effect of students' individual attitudes toward victims (Heirman & Walrave, 2012). Indeed, peers are considered to have a salient influence on adolescents' violent and aggressive behavior (Baxendale et al., 2012) as well as on online sexual behavior and cyberbullying (Baumgartner et al., 2011; Pabian & Vandebosch, 2014). Therefore, in this study adolescents' perception of cyberbullying of others by their peers is considered an important factor that may influence their behavior.

2.3 Family Climate and Cyberbullying

Family climate is defined as the positive or negative state of well-being that results from interactions among family members (Alonso-Tapia et al., 2013). Kurdek and Fine (1993) distinguish among four aspects of interaction: warmth, order, supervision, and conflict. These patterns of interaction may affect various personality variables as well as behavioral variables such as deviant behavior and cyberbullying (Cantero-Garcia & Alonso-Tapia, 2017; Buelga et al., 2016, 2017). Recent literature shows that positive family climate, characterized by adequate social support, strong cohesiveness among family members, and open and empathic communication, serves as a protective factor against cyber victimization and cyber perpetration (López et al., 2008; Buelga et al., 2017; Ortega-Barón et al., 2016). A protective factor is one that can lower the odds of being a victim or perpetrator of cyberbullying.

Warm and supportive families provide children and adolescents with a safe environment that reduces involvement in bullying both as perpetrators and victims (Ok et al., 2010). In fact, positive parent–adolescent communication is associated with parents' engagement in dialogue with adolescents about online risks, a practice linked to less involvement in cyberbullying (Mesch, 2009). By contrast, cyberbullies present poor family management (Hemphill & Heerde, 2014), a negative perception of parental support (Fanti et al., 2012), frequent family conflicts (Tanrikulu & Campbell, 2015), and negative communication patterns with parents (Elgar et al., 2014). Dysfunctional families cause adolescents to spend more time online in an attempt to replace interactions (Gomes-Franco & Sendín, 2014) and to be more inclined to hostility, antisocial behavior, and school violence (Buelga et al., 2015a, b). Cyberbullying victims experience higher levels of family conflict than do non-victims (Ortega-Barón et al., 2016) and less family cohesion and expressiveness due to these adolescents' lack of family resources (Buelga et al., 2017). In the case of cyberbullies-victims, studies find more psychosocial difficulties and weaker parental attachment among them than among cyberbullies, cyber victims, and the non-involved (Bayraktar et al., 2015).

2.4 The Present Study

In this study, an exploration is undertaken of differences among four cyberbullying roles—cyberbullies, cyber victims, cyberbullies-victims, and non-involved—in terms of individual characteristics, family climate, and perception of peers' cyberbullying behavior. As the literature above demonstrates, most research addresses itself to cyberbullies or cyber victims only, yielding an incomplete perspective on the topic (Sasson & Mesch, 2016a; Sasson et al., 2022). Few studies investigate all four groups from a comparative point of view; most include only some of the aspects addressed in this study (Buelga et al., 2017). This paper is innovative in its simultaneous testing of differences among individual, peer, and family variables and cyberbullying roles in a single study. Additionally, it addresses older adolescents, those in eleventh and twelfth grades, whereas most studies neglect this age group in favor of younger adolescents and children. Despite findings that indicate a decrease in online bullying rates with age, the phenomenon still exists in this age group and needs to be explored.

Furthermore, it is possible that at this age, on the verge of adulthood, family influence is different than it is at younger ages and therefore demands special attention.

Based on the literature presented, it is posited that:

H1: Girls are more involved in cyberbullying as victims and boys are more involved as cyberbullies and cyberbullies-victims, compared with the non-involved.

H2: Cyberbullies, cyber victims, and cyberbullies-victims have lower perception of academic achievements and higher average school absence than do the non-involved.

H3: The stronger the perception of peers' engaging in cyberbullying, the greater the odds of being a cyberbully and a cyberbully-victim.

H4: Warm and supervised family relations reduce the odds of being a cyber victim and a cyberbully-victim; conflicts in the family increase the likelihood of becoming a cyberbully and cyberbully-victim.

3 Methods

3.1 Sampling

3.1.1 Procedure

Data were collected by a professional survey company that holds a massive database of the population in Israel. A sample of adolescents was pulled out and asked to participate in the survey. After their parents' consent and their own were obtained, they were interviewed. The interviews took place in April–May 2021, most by telephone and some face-to-face by a professional interviewer in the participants' homes. Importantly, the sample was part of a large-scale three-round data collection operation in 2019–2021 that included parent-and-child dyads. It was designed to yield as a representative sample of adolescents in Israel and included Jewish and Arab adolescents. This paper focuses on the sample of adolescents in the last round and references only some of the questions in the full questionnaire. Importantly, the round of data collection analyzed here, the third, took place after the COVID pandemic. The study was approved by the Max Stern Yezreel Valley College ethics committee.

3.1.2 Participants

By gender, 55% of the participants were girls and 45% were boys; 57% of the participants were in eleventh grade and 43% were in twelfth grade; 67% were Jewish, 33% were Arabs; 38% live in the north of the country, 41% in the center and 20% in the south.

3.2 Measures

Cyberbullying Roles This variable is a combination of two different variables—being a cyberbully and being a cyber victim (details below)—that were cross-tabulated into four distinct groups: cyberbully (2), cyber victim (3), cyberbully- victim (4), and non-involved (1), illustrated in the table below.

		Cyberbully	
Cyber victim		Yes (1)	No (0)
	Yes (1)	Cyberbullies–victims (3)	Cyber victims (4)
	No (0)	**Cyberbullies (2)**	**Non-involved (1)**

Cyberbully Participants were asked to indicate how frequently they had engaged in online bullying behaviors or harassment in the past two years. This item was adopted from Shren-Beninson (2009). Importantly, only respondents who engaged in cyberbullying in one of the rounds were included in the data. Also, it is acceptable to refer to adolescents aged 15–17 as members of one age group that demonstrates similar behavior regarding cyberbullying perpetration (Buelga et al., 2015a). Responses ranged from never to many times and were introduced as a dummy variable (never=0 and at least once or twice=1).

Cyber Victim Cyberbullying victimization was measured by five items, validated by Menesini et al. (2011), in which respondents were asked to indicate the frequency of their encounters with several cyberspace situations during the current school year. Responses ranged from 1 (never) to 5 (almost every day/every day). Items included rejection or group exclusion, offensive messages, uploading a picture without permission, curses, and ridicule. A factor analysis (varimax rotation) meant to test validity and reliability yielded one factor loading in the 0.82–0.66 range and α=.78 reliability. The items were combined into a dummy variable that was coded 0 for all participants who had not experienced cyber victimization in any of the items and 1 for participants who had experienced cyberbullying in at least one item.

Gender Gender was measured as a dummy variable (boys=1, girls=0).

Perception of Academic Achievements These items were adopted and adjusted from the World Health international survey (2009) that was conducted in Israel. The participants were asked to evaluate their academic achievements generally and in mathematics, language (Hebrew or Arabic), and English specifically, as compared with other students in the class. Responses ranged from 1 (I am a very good student) to 5 (I am a bad student). A factor analysis (varimax rotation) meant to test validity and reliability yielded one factor loadings in the 0.88–0.72 range. The items were combined into a single scale (a = .84) by calculating the average scores for the individual items.

School Absence The participants were asked to indicate how many school days they had missed during the past thirty days for reasons other than illness or vacation. Their

responses ranged from none to five days or more. This item was adopted from the World Health international survey (2009) that was conducted in Israel.

Perception of Peers' Engagement in Cyberbullying Behavior This variable was measured with a single item, adopted and adjusted from Shren-Beninson (2009), in which respondents were asked to indicate the engagement of students in their school in online bullying or harassment in the past year. The responses, ranging from never to many times, were introduced in the analysis as a dummy variable (never=0 and at least once or twice=1).

Family Climate The family-climate concept was measured by adopting Kurdek and Fine's (1993) scale and structure. All items were translated to Hebrew and back to make sure they kept their original meaning. Kurdek and Fine deconstructed family climate into four factors: warmth, order, supervision, and conflict. A factor analysis (varimax rotation) meant to determine whether the eleven scale items conformed to the predicted four-factor structure yielded a three-factor structure (Eigenvalue >1): warmth (23%), order and supervision (22%), and conflict (22%). All items loadings were between 0.83 and 0.57.

Warmth This concept was measured via three items that reflected family warmth: "There is a strong sense of togetherness in our family"; "In our family we listen to each other "; "In our family we love one another." Responses for each item ranged from 1 (totally disagree) to 5 (completely agree). An average score was calculated. Cronbach's alpha was acceptable (a = .82).

Order and Supervision This concept was measured via the following five items: "In my family, family members recommend TV shows that I should watch"; "In my family, someone makes sure I did my homework"; "In our family, we usually eat meals together"; "In our family, there are fixed ways of doing things"; "In our family, the house is always tidy." Responses for each item ranged from 1 (totally disagree) to 5 (completely agree). An average score was calculated. Cronbach's alpha was acceptable (a = .72).

Conflict This concept was measured via the following three items: "There are many quarrels in our family"; "In our family, there is always someone who is angry or worried"; "In our family, it is difficult to settle problems." Responses for each item ranged from 1 (totally disagree) to 5 (completely agree). An average score was calculated. Cronbach's alpha was acceptable (a = .80).

4 Results

The data revealed that 9% of the participants reported having cyberbullied in the past two years, 25% reported having been victims of cyberbullying in the past twelve months, 11% reported having been cyberbullies-victims, and 55% reported having

been non-involved. Comparison of this finding with a study among nineteen European countries (Smahel et al., 2020) showed that the rates of cyberbullies are in the lower range and the rates of cyberbullying victims approximate the average (23%), placing Israel among countries that exhibit low rates of cyberbullying and average rates of cyber-victimization. Importantly, however, the sample used included only older adolescents (eleventh and twelfth grades) unlike the European study, which included students aged 9–16. This differentiation is important because cyberbullying is found to pick up at middle school and decrease at high school (Khan et al., 2020). As for cyberbullies-victims, the rates in this study are lower than those found by Mishna et al. (2012), who investigated students aged 10–17.

According to the descriptive statistics, 46% of the respondents reported that their schoolmates had been involved in cyberbullying. The average academic achievement was 2.1, meaning that the participants tended to see themselves as better students than were their friends. Average unjustified school absence was almost one day in the past month. The average family climate was high in respect of warmth, medium in order and supervision, and low in conflict (Table 1).

Table 2 presents the results of crosstabs and chi-square statistics between gender and cyberbullying roles. Statistically significant gender differences are attested, suggesting that a higher percentage of boys than of girls reported being cyberbullies, cyber victims, and cyberbullies-victims. A statistically significant difference was also found in the perception of schoolmates' bullying behavior, suggesting that the rates of cyberbullies, cyber victims, and cyberbullies-victims thinking that their schoolmates are involved in cyberbullying behavior exceed those who think they are not, while the rates of non-involved are higher among those who think their schoolmates are not involved in cyberbullying behavior (Table 3).

To test the hypotheses of this study, a multivariate analysis using nominal regression modeling was used because the dependent variable—cyberbullying roles—was a nominal four-group variable (Table 4). The reference group was the non-involved. The results indicate that the odds of being a cyberbully compared with being non-

Table 1 Descriptive statistics

Gender	Boys (N=151)		Girls (N=122)	
	55%		45%	
Cyberbullying role	Cyber-bullies (N=25)	Cyber victims (N=70)	Cyber-bullies/ victims (N=29)	Non-involved (N=149)
	9%	25%	11%	55%
	Mean		SD	
School absence	0.87		1.37	
Perception of academic achievements	2.13		.68	
Perception of peers' engagement in cyberbullying	0.46		.50	
Family climate—warmth	4.32		.68	
Family climate—order and supervision	3.53		.82	
Family climate—conflict	2.28		.93	

Table 2 Chi-square statistics for cyberbullying roles

Group	Gender		Peers' involvement in cyberbullying	
	Girls	Boys	No	Yes
Cyberbullies	5%	14%	5%	14%
Cyber victims	23%	30%	20%	32%
Cyberbullies-cyber victims	6%	16%	5%	18%
Non-involved	66%	40%	71%	35%
$X^2_{(3)}$	22.09**		39.55**	

Table 3 One-way ANOVA statistics for cyberbullying roles

	Cyberbullies	Cyber victims	Cyberbullies/ cyber victims	Non-involved	F
School absence	0.64	0.78	1.05	0.96	0.56
Perception of academic achievements	2.27	2.28	2.42	1.98	5.78**
F.C.—warmth	4.35	4.02	3.92	4.53	14.60**
F.C. – order and supervision	3.42	3.35	3.32	3.67	3.43
F.C.—conflict	2.60	2.57	2.74	2.01	10.95**

$^*p \le .05$, ** $p \le .01$

involved, and of being a cyberbully-victim compared with being non-involved, are higher for boys than girls, confirming Hypothesis H1. Contrary to the expectations embodied in H1, however, gender showed no significant association with cyber victims, indicating that girls are no more or less likely to be victims of cyberbullying than are boys compared with the non-involved. In Hypothesis H2, it was posited that perception of academic achievements and school absence would be associated with cyberbullying roles. The findings provided partial support for this assumption. Adolescents who perceive themselves as worse students than their friends are more likely to be cyber victims than are the non-involved. However, they are less likely to miss school days than are the non-involved. No statistically significant differences in academic achievement and school absence between cyberbullies and cyberbullies-victims compared with the non-involved are attested, meaning that students' perception of their academic achievements neither increases nor decreases their odds of being cyberbullies or cyberbullies-victims compared with the non-involved. The findings lend strong support Hypothesis H3. Adolescents who think their school-mates were involved in cyberbullying behavior in the past year are more inclined

Table 4 Multivariate regression—cyberbullying roles (dependent variable)

Group	Variables	B	SE B	Wald	Exp(B)
Cyberbullies	Intercept	-5.470	2.499	4.791	
	Gender	1.113	0.497	5.024*	3.044
	School absence	-0.281	0.196	2.056	0.755
	Perception of academic achievements	0.442	0.360	1.511	1.556
	Perception of peers' engagement in cyberbullying	1.280	0.513	6.222*	3.918
	F.C.—warmth	0.097	0.451	0.046	1.102
	F.C.—order and supervision	-0.009	0.343	0.001	0.991
	F.C.— conflict	0.590	0.281	4.412*	1.803
Cyber victims	Intercept	0.393	1.553	0.064	
	Gender	0.419	0.334	1.579	1.521
	School absence	-0.245	0.129	3.621*	0.783
	Perception of Academic achievements	0.520	0.253	4.215*	1.682
	Perception of peers' engagement in cyberbullying	0.642	0.335	3.678	1.901
	F.C—warmth	-0.930	0.292	10.138**	0.395
	F.C - order & supervision	0.151	0.237	0.407	1.163
	F.C - conflict	0.418	0.202	4.307*	1.519
Cyberbullies-cyber victims	intercept	-2.082	2.134	0.951	
	Gender	0.988	0.481	4.214*	2.685
	School absence	-0.269	0.176	2.343	0.764
	Perception of academic achievements	0.697	0.350	3.968	2.008
	Perception of peer' engagement in cyberbullying	1.558	0.528	8.695**	4.749
	F.C.—warmth	-1.055	0.387	7.418**	0.348
	F.C.—order and supervision	0.283	0.359	0.623	1.327
	F.C.–conflict	0.522	0.289	3.265	1.686

$^{*}p \leq .05$, $^{**} p \leq .01$

than the non-involved to be cyberbullies or cyberbullies-victims themselves. In the last hypothesis, two types of family climate—warmth, and order and supervision—were expected to reduce the odds of being a cyber victim and a cyberbully-victim and the third type of family climate—conflict—was expected to increase the likelihood of becoming a cyberbully and cyberbully-victim. The findings support H4 in part. As expected, warm and cohesive family relations reduce the odds of being a cyber victim and a cyberbully-victim relative to being non-involved. Conversely, difficult relations accompanied with fights and worries increase the odds of being a cyber victim and a cyberbully-victim relative to being non-involved. Contrary to expectations, the order-and-supervision aspect was not statistically significant, meaning that regardless of whether a family member knows what the adolescent is doing, checks his or her homework, or advising him or her on what to watch on television, these actions had no effect on the odds of becoming online victims, cyberbullies, or cyberbullies-victims.

In sum, three important risk factors for being a cyberbully were found: gender, perception of peers' engagement in cyberbullying, and family conflicts. In regard to cyber victims, two risk factors (perception of academic achievements and family

conflicts) and two protective factors (school absence and warm and cohesive family relations) were identified. As for cyberbullies-victims, two risk factors (gender and perception of peers' engagement in cyberbullying) and one protective factor (warm and cohesive family relations) were indicated.

5 Discussion

Previous studies have established that cyberbullying has adverse outcomes for adolescents' well-being. Yet less is known about differences in individual characteristics, peer influence, and family climate among cyberbullying roles. It is important to address this lacuna because such information may enhance understanding of the complex association among various risk factors, protective factors, and cyberbullying roles.

Family, an important social agent, may have opposite effects on adolescents—providing support and assistance on the one hand and amplifying difficulties and dysfunctional relationships on the other. The findings reported above suggest that two types of family climate are related to cyberbullies, cyber victims and cyberbullies-victims. As expected (H4), warm and cohesive relationships among family members are linked to lower odds of adolescents' being cyber victims and cyberbullies-victims. These results are congruent with studies that consistently show an association between positive, open, and fluid communication with parents and less cyber-victimization (Ortega-Barón et al., 2016; Buelga et al., 2016, 2017). One explanation for this phenomenon is that open and empathic communication provides a safe environment that encourages adolescents to disclose their difficulties and seek help (Kerr & Statin, 2000). Another explanation is that in families with open communication parents provide their children with information about social-media risks that can help them to be more careful and, consequently, less exposed to victimization (Mesch, 2009).

The findings also illuminate the role of family conflicts as a risk factor for cyberbullying and cyberbullying-victimhood, meaning that adolescents who experience quarrels and negative communication among family members are more likely to become cyberbullies than are others (H4). These findings correspond with previous studies that yielded similar results, suggesting that negative family climate and offensive communication with parents are evident in cyberbullies' families (Hemphill & Heerde, 2014; Tanrikulu & Campbell, 2015; Buelga et al., 2017). Lack of social support from adults encourages adolescents to spend more time online and to tend toward hostility (Gomes-Franco & Sendin, 2014; Buelga et al., 2015a, b).

It is further indicated that adolescents who are cyberbullies and cyberbullies-victims believe that their schoolmates engage in cyberbullying behavior (H3). This suggests that adolescents are motivated by what they consider prevalent social norms of acceptable behavior among their peers and, in turn, behave in this manner themselves. During adolescence, peers become individuals' most influential social group and adolescents who wish to fit in with their peers may adopt certain behaviors that they consider. Sasson and Mesch (2014) provide additional support for this argument by establishing that adolescents who engage in risky online activities believe that

their friends approve of such behavior. Similarly, Hinduja and Patchin (2013) find an association between online bullying behavior to perception of peers' behavior. They suggest that, in a deviant environment, peers' norms are reinforced by fear of shaming and the desire to obtain loyalty and to maintain status.

Gender is considered a risk factor for cyberbullying but the picture drawn in various studies is inconsistent. The findings of the present study suggest that the odds of being cyberbullies or cyberbullies-victims are higher among boys than among girls (H1). This finding squares with some studies (Heiman & Olenik-Shemesh, 2015; Hinduja & Patchin, 2013; Bayraktar et al., 2015; Cuadrado-Gordillo & Frenandez-Antelo, 2014; Buelga et al., 2017) but not with Kowalski and Limber (2013), who find girls more likely than boys to be cyberbullies. There are several explanations for this. One of them, noted recently, is age, that is, more girls than boys are cyberbullies in early adolescence and the opposite obtains in later adolescence (Smith, 2019). Since the data in this study are limited to only participants aged 17–18, this explanation corresponds with the findings reported here. Another explanation is predicated on gender socialization. Given that girls' socialization focuses on relationships and empathetic connectedness, girls may be more invested in friendship and conflict resolution than are boys and, therefore, less involved in bullying behavior (Foody et al., 2019). Contrary to the expectations expressed here and to earlier studies, girls are neither more nor less likely to be cyber victims than are boys. However, the lack of gender differences, documented by Katzer et al. in their early study (2009), is consistent with findings presented here.

This study also explored relations between perception of academic achievements and cyberbullying roles. Despite broad consensus in the research literature about the negative association of perception of academic achievements and cyberbullying, the findings show that academic achievement affects only cyber victims (H2). Perhaps cyberbullies are more self-confident and therefore judge their academic achievements to be better than those of their classmates, whereas cyber victims' lower confidence is reflected in their perception of academic achievements. Another interesting finding is that cyber victims have fewer unjustified absences, possibly because they regard school to some extent as a refuge from their online environment.

Thus, the foregoing findings emphasize the importance of family communication and support for older adolescents and the linkage of peer norms to cyberbullying. The evidence points to commonalities among the various cyberbullying groups. Thus, cyberbullies-victims share two risk factors with cyberbullies—gender and perception of peers' behaviors—and one protective factor with cyber victims: warm and cohesive family relationships. Cyberbullies and cyber victims have one risk factor in common: family conflicts.

5.1 Limitations of the Study

The findings of this study should be considered in light of several limitations. First, the study was designed as a cross-sectional one and therefore does not permit causal associations to be inferred. Longitudinal studies are needed to determine causality. Second, cyberbullying perpetration was measured via one variable only. Although it is an acceptable metric that yields solid and reliable data, studies that broaden

the measurement would provide more information. Third, some important aspects of social-ecological factors were omitted from this study because the data did not cover them. In future studies, the inclusion of a broader set of social-ecological factors such as online context (e.g., social networking and behavior patterns) and community contexts should be considered. Fourth, the largest group of students, the non-involved, may include distinct groups such as bystanders, victim-defenders, and bully assistants. Further studies should explore these roles for a deeper understanding of cyberbullying.

6 Conclusions

This study presents important and valuable findings for educators, counselors, therapists, and parents. At the macro level, the results indicate that school atmosphere influences adolescents' involvement in cyberbullying as online perpetrators and as victims. Adolescents' belief that their schoolmates are involved in cyberbullying behaviors promotes problematic norms that lead to more harm. Indeed, the findings provide additional support to the literature that emphasizes the important role of educational staff in offering students a safe environment and enabling them to assimilate appropriate norms. At the micro level, the results yield potentially useful signals of the risk of being a cyberbully, a cyber victim, or both. Family conflicts may indicate greater potential of being cyberbullies and cyber victims. Therefore, open conversation between guidance counsellors and students may help to detect dysfunctional communication and uncover cyberbullying behaviors. Additionally, parents may protect their children from online harm by providing them with supportive, open, and helpful communication.

Declarations

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