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ASSOCIATED FACTORS OF ALCOHOL USE AND CYBERBULLYING VICTIMIZATION IN ADOLESCENCE. EVIDENCE FROM HEALTH BEHAVIOUR IN SCHOOL AGED CHILDREN 2014.

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Table of Contents

General Abstract

The present dissertation addresses some of the challenges that adolescents have to face to pursuit health in contemporary society. Specifically, this work focuses on: (a) adolescents alcohol consumption and (b) cyberbullying victimization. Adolescence is, in fact, an age characterized by a high risk for engaging harmful behaviours. Plus, the pervasive presence of the Internet environment in adolescents' everyday life enhances the risk of being cyberbullied. The dissertation includes three studies that have been conducted on Health Behaviour in School-Aged Children (HBSC) 2014 data. HBSC protocol consents to study adolescence in three crucial phases (i.e., age 11, corresponding with puberty and the beginning of middle school; age 13 corresponding – in Italy – to the choice of the high school career; age 15, corresponding with high school years). The first chapter questions the interaction of gender, parental control, and family dinners in counteracting adolescents' monthly alcohol consumption. The second chapter investigates the differences and the commonalities among general, visual, and written cyberbullying victimization. The third chapter analyzes the associated factors of girls' cyberbullying victimization, with a specific focus on weight-related variables (e.g., actual weight in kilograms, perceived weight, body-mass index). The three studies reveal key-clues for prevention, emphasizing the crucial role of HBSC surveillance in monitoring the emerging patterns of risk and wellbeing for the new generations.

<div align="center">**General Introduction**</div>

<div align="center">**The Health Behaviour in School-Aged Children:**</div>

<div align="center">**An international surveillance on adolescents' health.**</div>

The Health Behaviour in School-Aged Children (HBSC) survey study

In our society, adolescents constitute the major developmental force on which all countries' future will rely on (Kuntsche & Ravens-Sieberer, 2015). Their ideas, strengths, motivations, emotions, and desires, as well as their issues, are writing the next pages of human history. Thus, monitoring and investigating new generations' wellbeing and health is fundamental to figure out how the world will look like decades later. Are adolescents doing enough physical activity? Are they satisfied with their relationship with family and peers? Are they too stressed-out by schoolwork? Are they satisfied with the lives they are living? How many cigarettes do they smoke in a month? Do they binge-drink during the weekends? Are they daily involved in school bullying or cyberbullying? How often do they assume medicines for the headache? All these questions may seem different, but they are crucial in a multifaced conceptualization of health (Kuntsche & Ravens-Sieberer, 2015), encompassing adolescents' physical, emotional, and social needs (World Health Organization, 2006; Currie, Nic, & Godeau, 2009). The first International Conference on Health Promotion (World Health Organization, 1986) suggested considering health as a resource that expresses its potential in everyday living. Health is not solely defined by the absence of illness (Currie et al., 2009) but also by the many psychosocial domains influencing habits and behaviours.

In line with this framework, the protocol Health Behaviour in School-Aged Children (HBSC) does not constitute a standard epidemiological study of surveillance, but a multidimensional investigation of adolescents' lifestyles and their interconnected patterns towards health. Since 1982, the HBSC study is repeated every four years on 11, 13, and 15-year-olds across different countries. These age ranges are elective in representing the core of

pre-adolescence and adolescence when boys and girls face: i. physical and neurobiological changes (i.e., puberty onset; Sisk & Foster, 2004); ii. socio-emotional challenges (i.e., balancing relational needs between family and peers; Erikson,1968; Armsden & Greenberg, 1987; Nickerson & Nagle, 2005); iii. essential decisions for their future career and identity (i.e., deciding which type of high school they will attend; Guichard, 2001). Such time-range is also crucial to define healthy habits or to engage risk behaviours (Currie et al., 2009; Roberts, Freeman, Samdal, Schnohr, Looze, Gabhainn et al., 2009; Schnohr, Molcho, Rasmussen, Samdal, Looze, Roberts et al., 2015).

In the last decades, the HBSC study became increasingly important for researchers and policymakers. HBSC's history began in 1982 when researchers from Norway, Finland, and England joined their actions to develop a common survey aimed to collect data on adolescents' smoking habits. This first cooperative intent constituted the start of HBSC surveillance as a cross-national research protocol, which is currently repeated every four years. Until 1994, each HBSC survey was based on a specific topic (i.e., smoking among adolescents) to facilitate data comparisons across the member-countries. Differently, since 1998, the protocol was designed to facilitate research on different areas of interest by including a standard self-report questionnaire and optional packages of questions (national variations in the questionnaire have been subsequently added) (Roberts et al., 2009). Up to now, HBSC gathers the joined efforts of 49 nations (5 participants more respect to 2013-2014 data collection) to monitor and study the health-related behaviours of adolescents.

The collaboration with the World Health Organization played a key role in managing, funding, organizing, publicizing, and disseminating the protocol, and, indeed, in guaranteeing HBSC's long-term suitability. Furthermore, the collaboration with other cross-national studies (i.e., the European School Survey Project on Alcohol and Other Drugs, ESPAD; the Global School-based Healthy Survey, GSHS) increased HBSC impact on society. Indeed, HBC

became a source of information also to the United Nations Children's Fund (UNICEF), the Organization for Economic Co-operation and Development (OECD), and the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) (Currie et al., 2009).

Besides its extent, according to Roberts et al. (2009), HBSC must face many different challenges to maintain a high international profile both towards researchers and policymakers:

i). First, HBSC has to keep up with the various financial resources of the participating nations. Given the heterogeneity of economic backgrounds, several methodological compromises need to be negotiated among countries' Principal Investigators to sustain and develop the project. This negotiation is essential to maintain the high quality of the survey, besides each country's economic availability is context-dependent (Harkness, 1999).

ii). Secondly, the language may represent a difficult obstacle to overcome to maintain a cross-nationally shared protocol. Thus, translated items are translated back to English and compared with the original version to ensure construct validity. The HBSC Methodology Development Group (MDG) addresses solving methodological issues.

iii). Third, HBSC needs to encompass both researchers' and policymakers' interests that may diverge (Hammersley, 2005). In line with this, the HBSC Scientific Development Group (SDG) and the Policy Development Group (PDG) are working in synergy to solve tensions and to disseminate both peer-reviewed research publications as well as reports available for local, national and international policymakers.

iv). Finally, one of the most significant challenges for HBSC is balancing between innovation and stability. While the technological process is impacting and changing adolescents' lifestyles, the core questions of the protocol need to be maintained the same across the years to develop trend analysis across time. Trend analyses from HBSC contribute to monitoring the health-related behaviour of adolescents over time, adding more information to cross-country comparisons. Trends' analyses allow to investigate patterns of behaviour from

generation to generation. For example, Boniel-Nissim, Lenzi & Zsiros (2015) pointed out that the use of electronic media communication among teens spiked from 2002 to 2010. Given that computer-mediated communication (CMC) is changing fast, the HBSC protocol 2018 has recently introduced specific items on problematic internet use for the new generations of adolescents.

Nevertheless, the key of HBSC suitability over time is its internal organization, which allows the protocol to negotiate different countries' decisions, to overcome cultural and linguistic divergences, to balance the needs of research and politics, and to choose which survey parts revise over time (Currie et al., 2009). HBSC is, in fact, based on an international assembly, directed by a Principal Investigator, and it includes different focus groups (i.e., Eating & Dieting, Physical Activity, Risk Behaviour, School, Family Culture, Mental health and wellbeing, Social Inequalities). All HBSC member countries mirror the same internal organization. The Methodology Development Group (MDG), the Scientific Development Group (SDG), the Policy Development Group (PDG) are supervising the collaboration among the internal groups. HBSC organizational structure also includes the International Coordinator (ICC, Edinburgh, WHO Collaborating Centre), the HBSC-Who Partnership Committee and WHO EURO to facilitate cooperation among the different countries, and the Data Bank Manager (Bergen, WHO Collaborating Centre) to store and protect data.

Regarding the content of the protocol, HBSC relies on a standardized school-based survey. Participants are sampled by clustering, with school-class as the primary sampling unit (Groves, Fowler, Couper, Lepkowski, Singer, & Tourangeau, 2011). Whether cross-national differences in the school systems hinder the sampling (i.e., children attending school-classes earlier or later than other countries), age is the prior unity to select the three representative ranges (11,13,15 years-old). In many nations, the questionnaires are delivered to schools to be administered in classes by teachers, while other countries imply researches or health services

operators for data-collection. Students answer core questions about demographic factors, social background, health, and risk behaviours. Once collected, data are prepared, sent, and stored in the HBSC International Data Bank at the University of Bergen (Norway).

The HBSC 2014 data-collection in Italy

In Italy, the national HBSC group has taken part in the international data collection of the years 2001-02, 2005-06 collecting a national sample. representative of the overall Italian territory (Cavallo, Lemma, Santinello, & Giacchi, 2007). In 2010, HBSC protocol has been included in the National Program 'Guadagnare Salute' - (Gaining Health) – part of the "Sistema di Indagini sui Rischi Comportamentali in età 6-17 anni" (System of investigation about behavioural risks between age 6 to 17-years-old) of the Ministry of Health- and, in collaboration with the Ministry of Health, the Istituto Superiore di Sanità (Higher Institute for Health) and the health service organizational infrastructure of all Italian Regions, it has carried been carried out in all regions and autonomous Provinces in Italy (Cavallo, Giacchi, Vieno, Galeone, Tomba, Lamberti et al., 2013). As the previous one, also 2014 data collection – which constitutes the sample of the present dissertation chapters – and the current 2018 data collection – under development-, have been implemented in each Italian region.

The procedure followed the international guidelines for sampling representative age groups within the population (11,13,15-years-old students). Cluster sampling was implemented using school-grade as the primary selection unit, after systematically selecting schools from the complete and alphabetically ordered lists of private and public schools in the territory of each region. The lists were provided by the Regional School Offices and the Ministry of Education. The classes were stratified by age (11, 13, 15-years-old students) to cover the geographical areas. This stratification aimed at obtaining representative and generalizable data (both locally and nationally). Furthermore, the expected sample size computed was 1200 for each age-range, assuming Confidence Intervals at 95% to obtain a precision rate of +/- 3.5%.

Each region could add from 10% to 25% subjects to the expected according to the expected rate of missing cases and to the rate of children repeating the class they were enrolled in.

Two different surveys were provided by the HBSC international network: the mandatory survey for the adolescents (11, 13, 15-year-olds) and the optional one for the School Principals. The second one was included to gain valuable information about the school environment, the population of students, and context-specific issues, but it will not be included in the subsequent studies. As recommended by the international guidelines, a core of items was administered to the adolescents, alongside with country-specific questions. In particular, the 2014 HBSC Italian self-report included: demographical data (e.g., age, sex, family structure), social status (e.g., parental occupational and educational levels), perceived wellbeing (e.g., perceived health, individual wellbeing), self-esteem (e.g., body image evaluation, self-acceptance), socio-emotional network (e.g., relationship with parents, with peers, with school environment), health-related behaviours (e.g., physical activity, leisure activities, eating habits, hygiene, alcohol, and tobacco consumption). Additionally, in the 2014 questionnaire, the Italian HBSC research group developed integrative questions about alcohol use habits and gambling.

The questionnaire was self-report and anonymous. According with the ethical Committee of the University of Turin - under the direction of P.I. Prof. Franco Cavallo -, students had to insert the questionnaire in a sealed envelope after questionnaire completion. Once schools gathered the informative consent form from parents to allow minors participation, the survey administration took part between March and May 2014. In each school, adequately trained teachers and health services operators conducted the administration. The epidemiological data were examined through descriptive analysis. The results were published in the national HBSC report and the Regional reports (information available at: http://www.hbsc.unito.it/it; http://www.hbsc.org/).

The HBSC 2014 data-collection in Lombardy

Since 2010, HBSC protocol is in the project "Guadagnare Salute" (Gaining Health) – part of the "Sistema di Indagini sui Rischi Comportamentali in età 6-17 anni" (System of investigation about behavioural risks between age 6 to 17-years-old) of the Ministry of Health. These updates lead to the inclusion of each Italian region in the HBSC survey, under the scientific coordination of the University of Turin. Data collection (2013-2014) in Lombardy was realized by the joined action of different institutions[1], such as health services on the territory, the Department of Lombardy Region, the Regional Prevention Network, the Regional School Office (Ufficio Scolastico Regionale), and the School Offices on the territory, with the collaboration of the school headmasters, the teachers and the families (information available at: http://www.promozionesalute.regione.lombardia.it/). Health services operators participated in a full-day training to learn about research aims, procedures, and administration methods in the classrooms. A paper *vademecum* containing the instructions was assigned to the administrators. Regional Coordination and National Coordination managed each phase of the procedure according with international guidelines. Cluster sampling on the schools in Lombardy and stratified sampling to select classes between schools was implemented. The final sample included 3172 participants, (51.6% boys, Mage = 13.74, SD = 1.70) distributed in the three age ranges: 11 years-old students from sixth grade class (n=1,113), 13 years-old students from eight grade class (n=1,153) in junior high-school, and 15 years-old students from

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[1] The Lombardy HBSC study was implemented thanks to the coordinated action of the HBSC Lombardy Group, which included the Regional Coordination HBSC study Lombardy: Corrado Celata e Liliana Coppola (Regione Lombardia DG Welfare); the MIUR (Ministry of Education, Universities and Research, Italy) – School Office Region Lombardy: Bruna Baggio; the Regional Research Group: Veronica Velasco, Marika Lavatelli, Giusi Gelmi, and Corrado Celata; the Health Protection Agency Referents: Bergamo Luca Biffi, Brescia Margherita Marella, Brianza Carlo Pellegrini, Ornella Perego, Insubria Walter De Agostini, Manuel Benedusi, Milano Città Metropolitana Corrado Celata, Paola Duregon, Alessandra Meconi, Celeste Zagheno, Montagna Valentina Salinetti, Marina Salada, Pavia Elisabetta Mauri, Val Padana Valter Drusetta, and Leone Armando Lisè; the Territory School Office Referents: UST Bergamo: Antonella Giannellini, UST Brescia: Federica Di Cosimo, UST Como: Laura Peruzzo, UST Cremona: Tullia Guerrini Rocco, UST Lecco: Jessica Sala, UST Lodi: Claudia Zoppi, UST Mantova: Barbara Artioli, UST Milano: Laura Stampini, UST Monza-Brianza: Maristella Colombo, UST Pavia: Emanuela Farina, UST Sondrio: Daniela Marchesi, and UST Varese: Linda Casalini.

tenth grade in high-school (n=906) (for information about classes see Table 1; for information about schools on the territory see Appendix 1 and Appendix 2).

Table 1.

Answering rate (number and percentage) of the sampled classes.

	Sampled Classes	Number of classes completing survey	Answering Rate (%)
Prima Media/ Sixth grade Junior Highschool	78	68	87.2
Terza Media/Eight grade in Junior Highschool	78	68	87.2
Seconda superiore/Tenth grade in Highschool	79	74	93.7
Total	235	210	89.4

The sample included 3172 participants, consisting of 1637 boys and 1535 girls, distributed throughout the three age ranges (see Table 2).

Table 2.

Sample composition for age and gender.

	Males	Females	Total
11 years-old students	37.6% (n=615)	37.5% (n=576)	37.5%
13 years-old students	34.2% (n=560)	33.6% (n=515)	33.9%
15 years-old students	28.2% (n=462)	28.9% (n=444)	28.6%
Total	100.0%	100.0%	100.0%
	1637	1535	3172

In the sample, 93.4% of participants were born in Italy, while 6.6% were born abroad. The percentage of students born abroad was higher in the 11-years-old age-range (see Table 3).

Table 3.

Sample composition for age and country of birth.

	11 years-old students	13 years-old students	15 years-old students	Total
Italy	94.2%	92.9%	93.0%	93.4%
	(n=1122)	*(n=998)*	*(n=842)*	*(n=2962)*
Other Countries	5.8%	7.1%	7.0%	6.6%
	(n=69)	*(n=76)*	*(n=63)*	*(n=208)*
Total	100.0%	100.0%	100.0%	100.0%

The present research: investigating risk behaviours in adolescence

Adolescence has been analyzed from different theoretical perspectives (e.g., biological, psychodynamic, socio-cultural). In 1904, Hall's pioneering approach associated adolescence with "storm and stress" processes given by physical development. However, the storm and stress view has been revised by Arnett (1999), because it risks to stereotypies the adolescents. Although conflicts with parents, mood disruption, and risk behaviours are more frequent during teenage years than in other stages in life, not all the adolescents experience storm and stress. According to Arnett (1999), individual, temperamental and cultural differences determine whether the adolescents will perform rebellious behaviours or experience intergenerational conflict. Plus, it is worth to note that biology is not the only process determining the adolescent's feelings and behaviours. According with Mead's (1952) socio-cultural perspective, adolescence is shaped by the characteristic of the societies where children grow, and also within such societies many environmental variables (e.g., behavioural models provided by media, peers, adults) influence the individual's behaviours (Bandura, 1977). In a psychodynamic framework, the adolescence's fulcrum is identity development (Erikson, 1968; Marcia, 1966, 1993). In fact, in the teenage years a permanent personality structure is built through a "second process of individuation" (Blos, 1979), which is addressed to becoming a functioning adult in the society. Adolescent boys and girls have to balance their socio-emotional resources between parents and peers (Armsden & Greenberg, 1987; Nickerson & Nagle, 2005), to gradually become independent and able to pursuit their future lifegoals (Miller, 1989).

In the light of this theoretical premise, the present research aims at investigating HBSC 2014 data for a deeper understanding of adolescents' behaviours that are risky for their health and psychosocial wellbeing. Missing-data values of each variable were treated with mean replacement (Roth, 1994) or prorating and mean replacement (Mazza, Enders, & Ruehlman,

2015): percentages of missing data for each variable were under 5%, the recommended threshold for missing treatment (Schaffer, 1997); proration was applied in variables where missing data were inferior to 50% of the total cases (Mazza et al., 2015).

This work focuses on alcohol consumption and cyberbullying victimization, representing crucial issues for adolescents' psychosocial health (Srabstein & Leventhal, 2010; World Health Organization, 2018). The dissertation presents one study on alcohol consumption and two studies on cyberbullying victimization. This structure is motivated by trend analyses showing that alcohol consumption rate among Italian adolescents decreased from 38% in 2002 to 24,1% in 2014 (Scafato, 2018), whereas cyberbullying rate increased in all European countries (from 7% in 2010 to 12% in 2014) (United Nation, 2019). Plus, gender differences in cyberbullying victimization (Marcum, Higgins, Freiburger, & Ricketts, 2012; Beckman, Hagquist & Hellström, 2013; Heiman & Olenik-Shemesh, 2015; Smith, 2019) motivated the necessity to understand more deeply cybervictimization among girls.

Thus, the dissertation will present three chapters equivalent to three different studies:

I. The first chapter will investigate alcohol consumption in adolescence, examining the phenomenon through the lens of gender and family-related variables (i.e., parental control, frequency of family dinners).

II. The second chapter, instead, will analyze the associated factors of cybervictimization (as a comprehensive form), written cybervictimization, and visual cybervictimization, testing a constellation of variables from different areas of adolescents' everyday life (i.e., gender, family, bullying, school relationships, psychosocial wellbeing, internet use).

III. Given the relevant impact of gender in cyberbullying dynamics, the third chapter will deepen the associated factors of female cybervictimization, partially retesting the variables used in the second study plus weight-related variables.

11

Please, see Appendix 3 to consult variables item and scales.

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Chapter I

Counteracting alcohol consumption during adolescence:

The role of gender, parental control, and family dinners.

Abstract

Background: Research highlights that during adolescence boys drink more frequently than girls. Non-coercive parental control has been demonstrated to decrease adolescents' alcohol consumption. Differently, literature points out controversial findings around the effectiveness of family dinners' frequency in counteracting adolescents' drinking. **Study aims:** The research tests: i. the existence of gender differences in alcohol consumption frequency and perceived parental control; ii. whether perceived parental control mediates the association between gender and adolescents' monthly alcohol consumption; iii. whether family dinners' frequency strengthen parental control's effect in decreasing adolescents' alcohol consumption. **Method**: The study analyzes data from 906 adolescents (49% boys, Mean age = 16.1, SD = 2.4) who completed the HBSC 2014 self-report protocol. Three moderated mediation models have been conducted, testing the mediation of maternal, paternal, and both parents' control separately, and the moderation of family dinners' frequency. **Results**: Gender differences in drinking patterns and perceived parental control have emerged. Maternal, paternal, and both parents' control result significantly decreasing adolescents' monthly alcohol use. Family dinners' frequency does not strengthen the effect of parental control on adolescents' alcohol consumption. **Discussion**: Findings confirm the protective role of parent-adolescent relationship quality (e.g., parental control) against adolescents' drinking, regardless of the time spent together (e.g., family dinners).

Introduction

Cairns and Cairns (1994) coined the term '*risk behaviors*' (even referred to as '*at-risk behaviours*') to indicate actions leading to harmful consequences for health, which also prevent adolescents from becoming, later in life, responsible and adapted adults (Resnick, Bearman, Blum, Bauman, Harris, Jones et al., 1997). According to Kulbok and Cox (2002), the most common risk behaviours, such as delinquent acts, reckless driving, drug use, addiction, and alcohol consumption, all enhance the risk of adolescents' mortality. Under the label 'at-risk' behaviours, alcohol consumption in adolescence constitutes a predictor of negative outcomes in adulthood (e.g., alcoholism, reduced capacity to work, premature death) (Marshall, 2014). Adolescence represents a crucial phase for brain development, during which alcohol consumption sensitizes the mesocorticolimbic pathway of dopamine, leading individuals to a long-term vulnerability towards addiction (Guerri & Pascual, 2010). Moreover, drinking-alcohol both accelerates gray matter's volume reduction in the lateral frontal cortex and in the temporal cortex and slows down the growth of white matter in the corpus callosum (Squeglia, Tapert, Sullivan, Jacobus, Meloy, Rohlfing & Pfefferbaum, 2015). The neurotoxic effects of alcohol on adolescents' cognition correspond to impairments in inhibitory control, reward processing, working memory, cue-reactivity, verbal learning, attention, visual-spatial processing (Spear, 2018; Courtney, Li, & Tapert, 2019), and to emotion regulation, behavioral, academic, and relational problems (Brown, McGue, Maggs, Schulenberg, Hingson, Swartzwelder, et al., 2008; Windle, Spear, Fuligni, Angold, Brown, Pine et al., 2008). Such a harmful impact on adolescents' development highlights the need for research to identify the factors truly counteracting teenagers' alcohol consumption (Foxcroft & Tsertsvadze, 2012).

In particular, the age of 15 years represents a threshold between alcohol user and non-user populations (Griswold, Fullman, Hawley, Arian, Zimsen, Tymeson, eta al., 2018). According to epidemiological data of World Health Organization (2018), in 2016 the

worldwide level of alcohol consumption per person was 6.4 liters, measured from the age of 15 years (WHO, 2018), with 26.5% of adolescents aging between 15-19 years consuming alcohol (WHO, 2018). Europe is the country with the highest rate of adolescent drinkers (43.8%), followed by USA (38.2%) and Western Pacific Region (37.9%). As regards Italians aging between 11 and 17 years, the Italian National Institute of Statistics (2017) refers that 22.9% consumed alcohol at least once per year, 21.7% occasionally, 11.7% between meals, and 1.2% daily. Asciutto and colleagues (2016) reports alcohol consumption by Italians - across all age ranges including adolescence – and show that northern Italy holds a visibly high rate of alcohol consumption. Noticeably, in Italy, selling alcoholic drinks to under-18 individuals is illegal. However, a qualitative study points out the existence of a gap between principles and behaviors (Beccaria, Molinengo, Prina & Rolando, 2019) as the majority of participants (73% over n=1816, aging between 15-31) declared to have consumed alcohol before they reached age 18.

Gender plays a crucial role in understanding adolescents' alcohol use habits, as different patterns of consumption between boys and girls have been observed across different countries: adolescent males tend to drink more frequently than female peers (World Health Organization, 2018). This gender difference is also confirmed in Italy, where 11% of boys and 8% of girls aging between 11-15 years consumed alcohol in the time range of one year, and 0.5% and 0.1% of girls in the same age-ranged consumed alcohol in one month (Italian National Institute of Statistics, 2017). According to Chen and Jacobson (2012), boys are generally more at risk for developing heavy-drinking patterns, and they initiate consuming alcohol earlier than girls.

The lower prevalence of drinking among girls in comparison to boys should not lead to underestimating this phenomenon. In fact, once occurred the initiation into alcohol consumption, girls drinking escalate faster than boys in alcohol consumption habits (Malone, Northrup, Masyn, Lamis & Lamont, 2012). Alongside, adolescent females' metabolic

vulnerability to alcohol neurotoxicity is higher than males (Lieber, 2000; Caldwell, Schweinsburg, Nagel, Barlett, Brown & Tapert, 2005).

A plausible explanation for gender differences in drinking behaviour may regard the salient socialization processes during adolescence, such as the need to affiliate with a peer group, and the need for gender identification (Schulte, Ramo, & Brown, 2009). In this perspective, boys may find drinking more important than girls for participation and interaction with peer groups, as alcohol consumption represents a path towards masculinity. Research on social conformity supports this evidence pointing out that girls endorsing masculine norms are more likely to drink alcohol, compared to girls who do not (Iwamoto & Smiler, 2013). Jacobs et al. (2020) also indicate that different reasons motivate girls' and boys' alcohol use, such as school club membership and peer-group behaviours for boys, and academic problems and alcohol use patterns within the family for girls. Conclusively, it is worth to note that in Italy – where selling alcoholic to under-18 is illegal – girls refer to be less prone than boys to violate this norm (Beccaria et al., 2019).

Parental control and alcohol consumption by adolescents

The quality of the parent-adolescent relationship represents a crucial perspective for counteracting adolescents' alcohol consumption (Ryan, Jorm, & Lubman, 2010; Kuntsche & Kuntsche, 2016) that can be explored by investigating parental control. In the Nineties, literature classified parental control as the number of parental decisions, acts of supervision, and rules enacted by the mother and the father to discipline their children (Amato, 1990). Alongside, studies demonstrated that parental control might be effective in preventing adolescents' alcohol and drug consumption by delaying the age of these habits' initiation (Velleman, Templeton, & Copello, 2005). Moreover, youths from families with high rates of control are less likely to use alcohol, tobacco, and cannabis (Choquet, Hassler, Morin, Falissard, & Chau, 2007).

Although the link between adolescents' psychosocial wellbeing and behaviors with parental control has raised considerable interest among scholars (Criss, Lee, Morris, Cui, Bosler, Shreffler, & Silk, 2015), two different conceptualizations have divided literature: the first considering parental control a positive component of parenting (Tilton-Weaver, Burk, Kerr, & Stattin, 2013), and the second describing its coercive and negative aspects (Costa, Hausenblas, Oliva, Cuzzocrea, & Larcan, 2016). Operationalizing this construct has been challenging for research that has not reached a complete consensus on one unique definition yet. Gray and Steinberg (1999) differentiated behavioral and psychological control: parental behavioral control implies that the parent regulates the child's behavioral repertoire (Bean, Barber, & Crane, 2006), while psychological control consists in pressuring the son or daughter to comply with parental requests also using manipulative strategies (Ingoglia, Inguglia, Liga, & Lo, 2017).

Another definition of parental control – that the present study will investigate - by Dishion and Mc Mahon (1998), further conceptualized by Stattin and Kerr (2000), identifies parental control as parental monitoring. The authors abandoned the idea of coercive control, reputing this aspect of supervision a questionable strategy (Stattin & Kerr, 2000). Parental monitoring refers to parents' knowledge about adolescent's everyday life. Specifically, it encompasses the awareness of parents about their son's or daughter's multiple domains of activities (e.g., who are his/her friend, place attended when he/she is away from school, reasons he/she spends money). This type of parental control results in the combination of communication, trust, and guidance exercised by parents towards adolescents, and it can foster adolescents' spontaneous disclosure (Stattin & Kerr, 2000; Kerr, Stattin, & Burk, 2010). In this framework, personal disclosure by the son/daughter provides parents with a more in-depth and easier way to gain knowledge than coercive strategies like tracking and surveillance.

According to Waizenhofer, Buchanan, and Jackson-Newsom (2004), parental monitoring foster adolescents' positive adjustment. Previous literature investigating adolescents' risk behaviors has also pointed out that parental monitoring is negatively associated with internalizing and externalizing problems (Lansford, Laird, Pettit, Bates & Dodge, 2014; Criss et al. 2015; Yap & Jorm 2015). Achenbach et al. (2001; 2002) defined internalizing problems as processes within the self (somatization, depressive symptoms, anxiety) while externalizing problems refer to actions directed towards the external context (hostility, aggression, acting out). During adolescence, high parental monitoring is related to lower levels of internalization (Stattin and Kerr 2000; Yap & Jorm 2015; Bacchini, Miranda, & Affuso, 2011).

Non-coercive parental control is also negatively associated with antisocial behaviors (Criss et al. 2015), substance consumption (Shillington, Lehman, Clapp, Hovell, Sipan, & Blumberg, 2005), cigarette smoking (Chuang, Ennett, Bauman, & Foshee, 2005), delinquency and gambling (Vitaro, Brendgen, Ladouceur, & Tremblay, 2001), problematic internet use (Liau, Khoo, & Ang, 2008), and also drinking behaviors (Capaldi, Stoolmiller, Kim, & Yoerger, 2009). For example, Arata et al. (2003) have shown that adolescents from families lacking parental monitoring are more prone to consume alcohol. More recently, a vast body of evidence has supported the influence of parental monitoring in counteracting adolescents drinking habits (van der Vorst, Engels, Meeus, & Deković, 2006; Wilson, Langille, Ogilvie, & Asbridge, 2018; Yap, Cheong, Zaravinos-Tsakos, Lubman, & Jorm, 2017). Plus, previous research has indicated that parental monitoring may both diminish the frequency of alcohol use in terms of drinks per week (Carroll, Heleniak, Witkiewitz, Lewis, Eakins, Staples, et al., 2016) and longitudinally functions as a protective factor against adolescents' drinking (Yap et al., 2017). By the same token, lower levels of parental control result associated with heavier alcohol use by girls and boys (Strunin, Díaz-Martínez, Díaz-Martínez, Heeren, Winter, Kuranz et al., 2015).

As regards gender, a meta-analysis points out that gender differences in parental controlling strategies are minimal (Endendijk, Groeneveld, Bakermans-Kranenburg, & Mesman, 2016). However, several studies support gender differences in perceived parental monitoring, as defined by Stattin & Kerr (2000), with girls reporting higher perceived monitoring than boys from both parents (Webb, Bray, Getz, & Adams, 2002; Darling & Tilton-Weaver, 2019). Interestingly, according to Strunnin et al. (2015) girls exhibit drinking habits when they come from families where the mother is often busy at work, confirming a gender-correspondence in monitoring patterns as the mothers tend to exercise more supervision on daughters, while fathers on sons (Okulicz-Kozaryn, 2011).

The open debate about family mealtime's effectiveness in counteracting risk behaviours and promoting health

Family mealtime frequency constitutes another factor capable of influencing adolescents' lifestyles, which raised great enthusiasm from media in the past decades (Califano, 2007). Family mealtime frequency was considered crucial by the American Psychological Association (APA) in endorsing adjustment during adolescence (Bowden & Zeisz, 1997). Family mealtime can be interpreted both as a preventive factor against risk behaviours and a promotive factor to gain and maintain health (Masten, 2011). Since 2001 the USA National Center on Addiction and Substance Abuse (CASA) has celebrated the event "Family Day – A Day to Eat with Your Children". This event aims at raising American parents' responsibility in transmitting long-term healthy habits to the next generations, by positively influencing their lifestyles during adolescence. CASA's perspective states that the more frequently the adolescent eats together with parents, the less he/she will develop long-term and short-term unhealthy behaviors (i.e., substance use, delinquency, alcohol use, early and unprotected sexual behaviors). It is worth to note that such enthusiasm about the effectiveness of this preventative factor derived from evidence about nutritional habits: DSM III, for example, presented the criterion "inconstant

eating habits" to diagnose cocaine addiction (Jonas, Gold, Sweeny & Pothas, 1987), linking substance consumption with mealtime frequency irregularity (Filstead, Parella & Ebbit, 1988). Moreover, family mealtime resulted associated with many positive outcomes in the adolescent's life, such as perceived wellbeing, high self-esteem, successful school performance (Compañ, Moreno & Ruiz, 2002; Harrison, Norris, Obeid, Fu, Weinstangel & Sampson, 2015), and reaching a regular body-weight (Fiese, Tomcho, Douglas, Josephs, Plttrock & Baker, 2002; Sen, 2006; Berge, Wall, Hsueh, Fulkerson, Larson & Neumark-Sztainer, 2015). About the last point, recent evidence argues that eating together with the family does not significatively impact on weight during adolescence (Walton, Horton, Rifas-Shiman, Field, Austin, Haycraft et al.,2018). Nevertheless, it has been shown that skipping meals due to family socioeconomic condition (low-socioeconomic status) have dangerous consequences for adolescents psychological and physical wellbeing (Molcho, Gabhain, Kelly, Friel & Keller, 2007). Given this body of evidence, the phenomenon has been investigated beyond the framework of nutritional habits.

Scientific literature suggests considering a constellation of variables to explain complex behaviors (Ennet, Ringwalt, Thorne, Rohbrach, Vincus, Simons-Rudolph et al., 2003), and it discourages structuring preventative and intervention strategies around one single factor and one single outcome. However, several studies on other familial protective factors against alcohol use lead to the still-ongoing debate around family mealtime's capacity to prevent risk behaviors in adolescence. Initially, the family structure, for example the single-parent family, has been considered the cause of an increased risk for substance use (Turner, Irwin & Millstein, 1993; Hoffman, 1993; Hemovich & Crano, 2009), drop-out from school (Astone & Mc Lanahan, 1991; Gioumouki, Smaili, Antoniou, & Babalis, 2018), and teenage-pregnancy (Hogan & Kitagawa, 1985; Zito & De Coster, 2016). Such studies shaped the idea that a less structured family environment, lacking constant family routines, could have a

negative influence on adolescents' behaviors. Additionally, several studies have highlighted an association between low-monitoring parents and earlier and more frequent substance use and delinquency by adolescents (Chilcoat & Anthony, 1996; Mann, Kretsch, Tackett, Harden & Tucker-Drob, 2015). Alongside, research has shown that adolescents not experiencing sufficient family communication, support, and rules, tend to develop more aggressive and risky behaviours, (Selnow, 1987; Anderson & Henry, 1994; Gorman-Smith, Tolan, Zelli & Huesmann, 1996; McLaughlin, Campbell, & McColgan, 2016). Adolescents from family not practicing shared-activities or routines are also more prone to use alcohol and tobacco (Cohen, Richardson & La Bree, 1994). Plus, evidence on the effectiveness of family cohesion and social capital in decreasing adolescents internalizing and externalizing problems (Child Trends, 2010; McPherson, Kerr, McGee, Morgan, Cheater, McLean et al., 2014), has contributed to raising interest about family mealtime's frequency too.

Certainly, the family environment represents children and adolescents' first and principal source of human socialization (Baranowski & Nader, 1986), which also teaches them behavioral models to replicate with long-term impact on future life choices and habits (Bandura & Walters, 1977). The life-events inside the family-system substantially interconnect with the individual development (Szapocznik & Williams, 2000), and this grows even more important during adolescence that is a crucial phase for building the individual's identity (Erikson, 1959; Marcia, 1966, 1993). Adolescence challenges individuals to integrate two different necessities: i. affiliating with same-age peers to grow independent from parents (Nickerson & Nagle, 2005; Viejo, Monks, Sánchez-Rosa, & Ortega-Ruiz, 2019), ii. maintaining proximity with the family, which keeps representing the primary source of socio-emotional support, able to buffer the impact of negative life-events on adolescents' wellbeing (Garmezy & Masten, 1994). The adolescents with the best psychosocial functioning are the ones who keep a balance between the need for affiliation with both peers and family (Allen, Shockley & Poteat, 2008).

Accordingly, the quality of the relationship with parents is negatively associated with unhealthy lifestyles (Harrison et al., 2015), irregular eating habits (Neumark-Sztainer, Story & Hannan, 2000; Zubatsky, Berge, J., & Neumark-Sztainer, 2015), cigarette consumption and suicide ideation (McGee, Williams & Nada-Raja, 2005; Gutman, Eccles, Peck, & Malanchuk, 2011), as well as underage sexual activities (Parera & Suris, 2004; Pain, 2018).

The relationships' quality within the family system may be enhanced by family mealtime, as a daily moment of mutual exchange: parents are given a special occasion to keep up with adolescents' verbal and non-verbal signals, to dialogue, to negotiate and to improve one crucial component of parental monitoring, namely parental awareness (Dishion & McMahon, 1998; Stattin & Kerr, 2000). Parental awareness consists of cultivating knowledge of the son's or daughter's activity when the adolescent is not at home or in school (e.g., Who are his/her friends? Where do they meet? How does he or she spend his/her money? Etc.). It is essential to notice that other types of shared routine (i.e., family-trips, family celebrations, family holidays) do not allow to observe the adolescent-parent relationship from a daily perspective as permitted by family mealtime (Fiese, Foley & Spagnola, 2006). Family meals also reinforce the sense of belonging to the family (Fiese et al., 2006), and besides their average duration in Western countries is around twenty minutes (Fiese & Schwartz, 2008), these moments vehicle traditions' and encourage learning (Larson, Nelson, Neumark-Sztainer, Story, & Hannan, 2009). According to CASA, adolescents attending more frequently to family meals obtained better school performance than peers experiencing family meals less often (CASA, 2007, 2009, 2010, 2011, 2012). These reports opened the door to other potential benefits of family meals, functioning not exclusively as a preventative factor against risk behaviors, but also promoting positive outcomes and wellbeing.

However, family mealtime actual effectiveness is the object of an open debate in the scientific literature. Recently, a systematic review by Goldfarb and colleagues (2017) has

pointed out that research underestimated the influence of confounding factors on the effectiveness of family meals' frequency. Family support, family cohesion, family structure, family communication, have to be isolated to observe the exact statistical effect of family meals' in reducing risk behaviors by adolescents (Goldfarb, Locher, Preskitt, Becker, Davies & Sen, 2017). Given the gender differences in risk behaviors patterns of boys and girls (Skeer & Ballard, 2013; White & Halliwell, 2011), also the influence of gender should be controlled. Gender differences interlace with the cultural matrix, which influences how boys and girls initiate and experience risk behaviors (Byrnes, Miller & Schafer, 1999; Barnes, Reifman, Farrel & Dinctcheff, 2000; Tildesley & Andrews, 2008; Schultze et al., 2009). For example, Levin, Kirby, and Currie (2012) showed that family dinners' frequency reduces cannabis use in males and not in females, but – on the other hand – it decreases bullying, alcohol consumption, and cigarette use both in boys and girls. An open debate splits scientific literature between studies supporting the effectiveness of family meals and studies discouraging such evidence:

1. *Evidence supporting family mealtime effectiveness in buffering risk behaviours*: Benedict, Evans, and Calder's (1999) research points out that adolescents more often engaged in substance use are the ones eating more often with peers than with family members. Griffin, Botvin, Schier, Diaz, and Miller (2000), controlled the effect of family structure (traditional family vs. single-parent family) to detect that eating more often with family is associated with decreased rates of delinquency. Research also shows that family meals' frequency can reduce suicide ideations, underage sexual behaviors, antisocial behaviors, unhealthy food-habits, school-related problems, substance use, cigarette consumption (Fulkerson, Story, Mellin, Leffert, Neumark-Sztainer & French, 2006; Franko, Thompson, Affenito, Barton & Striegel-Moore, 2008), as well as the frequency of cybervictimization (Elgar, Napoletano,Saul, Dirks, Craig, Poteat et al., 2014), and alcohol consumption (Eisenberg, Olson, Neumark-

Sztainer, Story, & Bearinger, 2004). Moreover, there are long-term positive effects of family meals, such as: the rise of emotion-oriented coping strategies and increased family cohesion, longitudinally measured after ten years (Franko et al., 2008), and a decrease in alcohol consumption measured after fourteen years (Abar, Clark, & Koban, 2017). Finally, the research by Utter, Denny, Robinson, Fleming, Ameratunga, and Grant (2013) isolated the confounding effect of age, gender, ethnicity, socioeconomic status, family cohesion, parental control, parental communication, finding a positive association between adolescents' wellbeing and family mealtime's frequency. Simultaneously, the same research highlights a negative association of family meals with binge drinking, underage sexual activities, cannabis and cigarette use, depressive symptoms.

2. *Evidence not supporting family mealtime effectiveness in buffering risk behaviours*: Miller, Waldfogel, and Han's (2012) study does not report a significant association between family meals and decreased internalizing and externalizing symptoms, or with improved school achievement. Hoffman and Warnick's (2013) do not report any association between family meal frequency and a decrease in alcohol use or a delay in alcohol consumption by adolescents. Events timing could constitute another confounder to explore, to understand whether family mealtime frequency could impact on an established habit or not. To sum up, the difficulty in isolating family meals' true effect from other variables remains the main issue for considering it a real preventative factor (Goldfarb et al., 2017; Goldfarb, Tarver, Locher, Preskitt, & Sen, 2015; Goldfarb, Tarver, & Sen, 2014).

In summary, although the criticism about confounding effects of other familial variables (Goldfarb et al., 2017), regularly attending family meals may diminish adolescents' drugs use (Benedict et al., 1999), delinquency (Griffin et al., 2000), cyberbullying victimization (Elgar

et al., 2014), cigarette smoking (Franko et al., 2008), and other at-risk behaviours (i.e., suicide ideations, binge eating, school problems, underage sex behaviours) (Fulkerson et al., 2006). This factor also emerged capable of increasing teenagers' wellbeing (Utter et al., 2013), and of improving the quality of their coping strategies with an indirect effect on stress (Franko et al., 2008). On the other hand, family mealtime has been found ineffective in counteracting internalizing and externalizing behaviours (Miller et al., 2012).

Alcohol use in adolescence is one of the most debated variable among risk behaviours, in association with family mealtime frequency. While Hoffman and Warnick (2013) state that familial meals cannot prevent adolescents from drinking, a significant reduction is supported by short-term and long-term evidence (Eisenberg, Olson, Neumark-Sztainer, Story, & Bearinger, 2004; Abar, Clark, & Koban, 2017). This controversial asset motivates the necessity to shed light on the potentiality of family mealtime frequency in counteracting adolescents' alcohol use.

Aims and hypotheses

The study aims at providing a deeper understanding of the protective family-factors against adolescents' alcohol use, examining patterns of interaction among gender, last month drinking frequency, parental control, and family dinners' frequency of attendance. Three hypotheses are tested:

1) Boys are expected to drink more often than girls and to perceive higher control from fathers. Girls, instead, are expected to drink less frequently than boys, perceiving higher control from mothers.

2) High paternal control, maternal control, and both parents' control, mediate the relationship between gender and alcohol consumption by decreasing alcohol

consumption, with different patterns of control given by a gender correspondence between mothers-daughters and fathers-sons.

3) Family meals' regular participation is expected to strengthen the effect of parental control in diminishing adolescents' drinking, with differences between girls and boys in benefitting from this protective factor.

Method

Participants

Tenth-grade students, corresponding to 15-years old age range (n=906, 49% males, M_{age} = 16.02 years, SD = 2.4) who completed HBSC self-report protocol, constitute the sample of the present study. On 79 classes sampled for tenth grade, 6.3% did not complete the protocol due to recruitment delays or time constraints. A 24.5% drop out was registered on the expected sample size, as the estimated for each of the three age ranges (11, 13, 15-year-old) was 1200 students. Reasons for the drop-out rate were lacking family consent, participants refusing to take part in the procedure, absence from school. Among the participants, the majority (86%) reported medium and high levels of familial socioeconomic status. Most of the adolescents reported Italian nationality (84%) while 16% reported other specified (e.g., Romanian, Albanian, Moroccan, Ukrainian) and non-specified nationalities.

Procedure

HBSC 2014 protocol was implemented in Italy thanks to the synergy among the University of Turin, National Research Co-ordinance Centre, Regional School Office, Territorial School Offices, Local Prevention Network, and medical institutions within each Italian region (see "General Introduction" for more information). A random cluster sampling was conducted to select schools on the alphabetically ordered list of schools on the territory. Subsequently, a further stratified sampling was run to select tenth-grade classes representative

for the 15-year-old age range randomly. Before administration, ethical approval was sought from the involved institutions under the lead of the University of Turin (P.I. Professor Franco Cavallo). School boards also provided ethical approval and collected informed consent documentation from participants' families. Moreover, every student was informed about study aims and guaranteed about data confidentiality. Survey administration was implemented in May 2014, and took part during school days, requiring 60 minutes for self-report completion. The administration in the classrooms was carried out by health service operators.

Measures

Parental control: adolescents were asked to rate how much they believed their mother and father – separately - were aware of their everyday lives in different domains (i.e., leisure time activities, places visited in the evening, friends' identity, reasons to spend money, places visited after school). The measure is a subscale driven by Stattin & Kerr (2000), and it has been validated in Italy (Miranda, Bacchini & Affuso, 2012). Answers were rated on a 4-point Likert scale: 1= high awareness, 2=medium awareness, 3=absence of awareness, 4=absence of mother/father in the family. Maternal control and paternal control presented good internal consistency (for maternal control, Cronbach's α was .80; for paternal control, Cronbach's α was .89). Given the positive correlation between paternal and maternal control (Pearson's r=.54, p<.01), a total mean index of parental control was also computed (Cronbach's α was .86).

Family dinners frequency of attendance was measured by one single item questioning how often the adolescents used to eat with parents. Answers were rated from 1 = never to 6=daily (2 = less than once a week, 3 = 1-2 times per week, 4 = 3-4 times per week, 5 = 5-6 times per week).

Alcohol use was measured in terms of last month's alcohol consumption frequency. Participants were questioned "How often did you drink alcohol in the last 30 days?" and responded from 1 to 7 (where 1 = never, 2 = 1-2 days, 3 = 3-5 days, 4 = 6-9 days, 5 = 10-19 days, 6 = 20-29 days, 7 = 30 days). The monthly time range of alcohol consumption was chosen i. because in line with World Health Organization and the European Alcohol Policy guidelines (2016); ii. to prevent confounding seasonal effects, that are more likely to emerge in one-year retrospective questions (Knudsen & Skogen, 2015); iii. to capture the most recent individual life-experiences (Beard, Brown, West, Acton, Brennan, Drummond et al., 2015).

Analytic Plan

Statistical analyses were performed using IBM Statistical Package for Social Science (SPSS) 20th version. Descriptive analyses and Pearson product-moment correlation (Pearson's r) were run as preliminary analyses on frequency, distribution, and corelations among variables of interests. Comparisons between boys and girls on family dinners' frequency of attendance, monthly alcohol consumption, perceived parental control, were effectuated through independent t-tests with a 95% confidence interval (CI) for the mean difference. PROCESS Macro for SPSS (Hayes, 2012) was run to perform three moderated mediation models, in order to: (a) detect whether mother's control, father's control, and both parents' control mediation conditioned the association between gender and last-month alcohol consumption, and (b) to test the moderation of family dinners frequency on the association between mother's, or father's, or both parents' control and alcohol consumption.

Results

Performed Pearson's product-moment correlations, displayed in Table 1, revealed that adolescents attending more frequently to family meals perceived higher maternal and paternal

control. At the same time, adolescents perceiving higher maternal, paternal, and both parent's control, consume alcohol less frequently in the 30 days previous survey administration.

Table 1.

Correlations among Frequency of Family Dinners Attendance, Alcohol use over the Last 30 Days, Maternal Control, Paternal Control, Both Parents' Control (n = 906).

Variables	1	2	3	4	5
1. Family dinners' frequency	1				
2. Alcohol consumption in the last 30 days	-.06	1			
3. Father's control	.18**	-.19**	1		
4. Mother's control	.11**	-.31**	.54**	1	
5. Parental control (Both parents)	.16***	-.26***	.63***	.39***	1

Note. $^{**}p < .01.$, *** p<.001. Family dinners frequency: 1=never, 6=daily. Alcohol consumption in the last 30 days: 1=never to 7 = 30 days). Father's, mother's, both' parents' control: 1= high awareness, to 4=absence of mother/father in the family.

T-tests for independent samples were run to investigate gender differences in family dinner frequency, alcohol consumption over the last 30 days, paternal control, and maternal control, are displayed in Table 2.

Males resulted participating more often than females to family dinners, to consume more alcohol (in the last 30 days), to perceive higher father's control than females and lower mother's control than females. Interestingly, no significant gender difference resulted in the index of both parents' control.

Table 2.

Gender Differences in Adolescents' Alcohol Consumption over the Last 30 Days, Family Dinners Attendance frequency, Maternal Control, and Paternal Control.

	Males (*n* = 462)		Females (*n* = 444)		95% CI		t(df)	d
	M	**SD**	**M**	**SD**	**Lower**	**Upper**		
Family dinners frequency	5.62	0.71	5.45	1.08	.055	.295	2.86(763)*	.19
Alcohol consumption (previous 30 days)	2.13	1.23	1.86	1.05	.120	.419	3.54(892)*	.24
Paternal control	2.40	0.50	2.32	0.55	.017	.155	2.45(904)*	.15
Maternal control	2.59	0.38	2.69	0.36	-.151	-.054	-4.14(904)*	.27
Parental control (Both Parents)	1.51	0.42	1.49	0.41	-.035	-.074	0.69(904)	.05

Note. CI = Confidence Interval. *$p < .05$. Family dinners frequency: 1=never, 6=daily. Alcohol consumption in the last 30 days: 1=never to 7 = 30 days). Father's, mother's, both' parents' control: 1= high awareness, to 4=absence of mother/father in the family.

To test whether the association of gender with alcohol was mediated by parental control, and moderated by the frequency of family meals attendance, three moderated mediation models (Model 1, Model 2, Model 3) were performed (see Table 3-4-5). Overall, Model 1 (Table 3, Figure 1) resulted statistically significant $F(4,901) = 25.93$, $p < .001$, $R^2 = .10$. Boys emerged consuming more alcohol than girls, while girls resulted in perceiving higher maternal control. Mother's control resulted in reducing adolescents' alcohol use. Family dinners' attendance did moderate the association between maternal control and adolescents' alcohol consumption in the last 30 days.

Table 3.

Model 1: the Moderated Mediation model on the Interplay of Gender, Maternal Control, and Family Dinners Attendance in Predicting Adolescents' Alcohol Consumption Over the Last 30 Days.

Variable	Outcome	*B*	*SE*	*t*	95% CI	
					Lower	Upper
Gender	Mother's control	.28***	.06	4.39	.16	.41
Gender	Alcohol use over the last 30 days	-.17**	.06	-2.65	-.29	-.04
Mother's control	Alcohol use the last 30 days	-.28***	.03	-8.71	-.35	-.22
Family dinners attendance	Alcohol use over the last 30 days	-.04	.03	-1.14	-.10	.03
Mother's control X Family dinners attendance	Alcohol use over the last 30 days	.04	.03	1.45	-.01	.10

Note. Gender was coded as male = -1, female = 1. CI = Confidence Interval. **$p < .01$; ***$p < .001$. Family dinners frequency: 1=never, 6=daily. Alcohol consumption in the last 30 days: 1=never to 7 = 30 days). Father's, mother's, both' parents' control: 1= high awareness, to 4=absence of mother/father in the family.

Figure 1.

Moderated Mediation Model with Maternal Control as a Mediator.

Note. Gender was coded as boy = -1, girl = 1. **$p < .01$; ***$p < .001$.

Model 2 (Table 4, Figure 2) resulted statistically significant $F(4,901) = 13.85$, $p < .001$, $R^2 = .06$. Boys resulted drinking more often than girls and perceiving higher parental control by the fathers. As maternal control, paternal control resulted effectively diminishing adolescents' alcohol consumption in the last 30 days. As in Model 1, the frequency of family dinners' attendance did not moderate the association between paternal control and adolescents' alcohol use over the last 30 days.
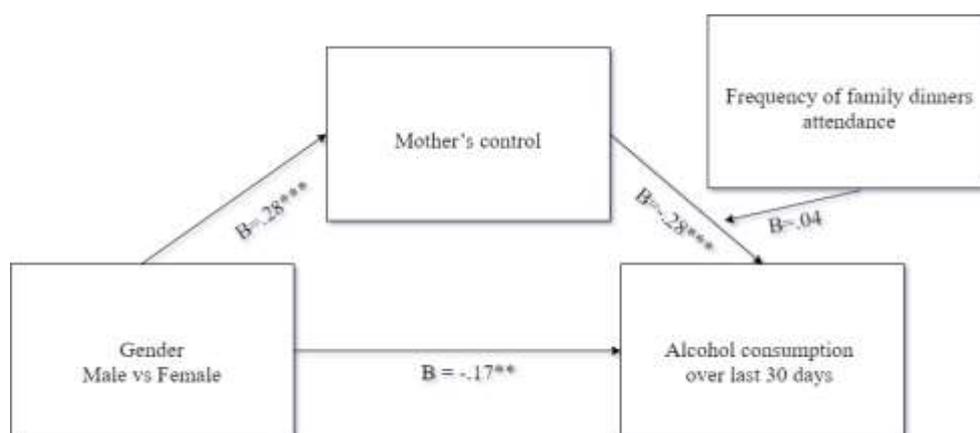
Table 4.

Model 2: the Moderated Mediation model on the Interplay of Gender, Paternal Control, and Family Dinners Attendance in Predicting Adolescents' Alcohol Consumption Over the Last 30 Days.

Variable	Outcome	*B*	*SE*	*t*	95% CI Lower	Upper
Gender	Father's control	-.15[*]	.06	-2.34	-.28	-.02
Gender	Alcohol use over the last 30 days	-.28[***]	.06	-4.36	-.41	-.16
Father's control	Alcohol use over the last 30 days	-.19[***]	.03	-5.80	-.26	-.13
Family dinners attendance	Alcohol use over the last 30 days	-.04	.03	-1.33	-.11	.02
Father's control X Family dinners attendance	Alcohol use over the last 30 days	.01	.03	.31	-.05	.07

Note. Gender was coded as male = -1, female = 1. CI = Confidence Interval. [*]$p < .05$; [***]$p < .001$. Family dinners frequency: 1=never, 6=daily. Alcohol consumption in the last 30 days: 1=never to 7 = 30 days). Father's, mother's, both' parents' control: 1= high awareness, to 4=absence of mother/father in the family.

Figure 2.

Moderated Mediation Model with Paternal Control as a Mediator.

Note. Gender was coded as boy = -1, girl = 1. $^*p < .05$; $^{***}p < .001$.

Finally, Model 3 (Table 5, Figure 3) resulted statistically significant $F(4,901) = 20.37$, $p < .001$, $R^2 = .29$. Again, boys resulted consuming alcohol more often than girls. No gender association was found with parental control when measured as the index of both parents, but parental control resulted in reducing alcohol consumption. Like in Model 1 and 2, family dinners' attendance did not result in significantly moderating the association between parental control and adolescents' alcohol consumption in the last 30 days.
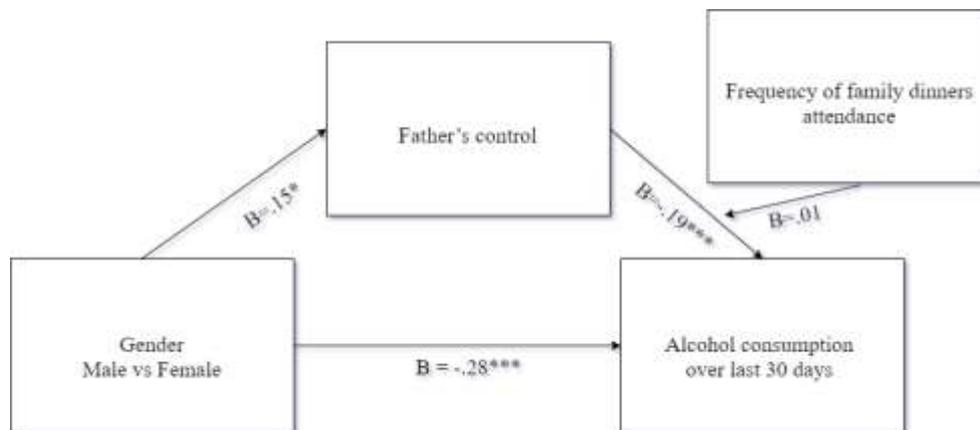
Table 5.

Model 3: the Moderated Mediation model on the Interplay of Gender, Parental Control, and Family Dinners Attendance in Predicting Adolescents' Alcohol Consumption Over the Last 30 Days.

Variable	Outcome	*B*	*SE*	*t*	95% CI	
					Lower	Upper
Gender	Parental control	-.01	.01	.70	-.04	.02
Gender	Alcohol use over the last 30 days	-.14***	.04	-3.67	-.22	-.07
Parental control	Alcohol use over the last 30 days	-.71***	.09	-7.59	.52	.89
Family dinners attendance	Alcohol use over the last 30 days	-.04	.04	-1.06	-.12	.04
Parental control X Family dinners attendance	Alcohol use over the last 30 days	-.09	.09	-1.08	-.26	.08

Note. Gender was coded as male = -1, female = 1. CI = Confidence Interval. $^{*}p < .05$; $^{***}p < .001$. Family dinners frequency: 1=never, 6=daily. Alcohol consumption in the last 30 days: 1=never to 7 = 30 days). Father's, mother's, both' parents' control: 1= high awareness, to 4=absence of mother/father in the family.

Figure 3.

Moderated Mediation Model with Both Parent's Control as a Mediator.
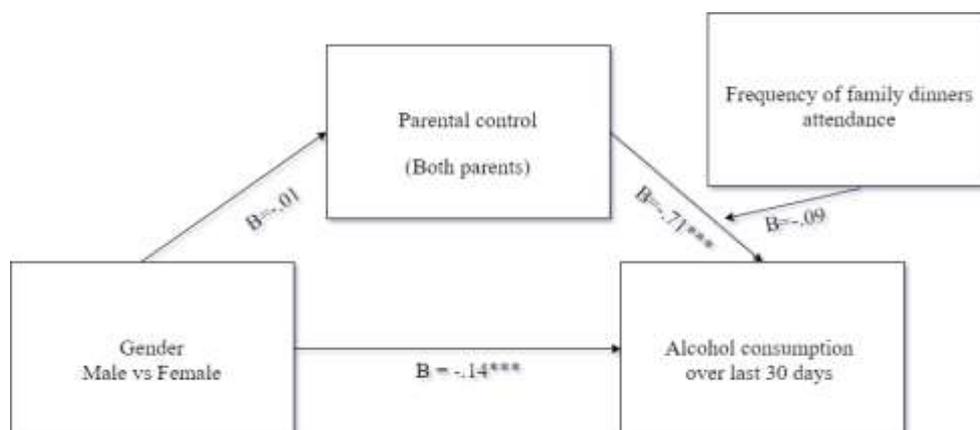
Note. Gender was coded as boy = -1, girl = 1. $^{**}p < .01$; $^{***}p <.001$.

Discussion

Since epidemiological evidence (Asciutto, Lugo, Pacifici, Colombo, Rota, La Vecchia, & Gallus, 2016) highlights a high rate of drinking behaviours by teenagers in northern Italian regions, the present study has investigated alcohol consumption by tenth-grade adolescents from Lombardy (Northern Italy), who participated to the Health Behaviour in School-aged Children (HBSC) survey in 2014. The study investigated the pattern of alcohol consumption by adolescents in the time range of a month, and it analyzed the impact of gender differences as well as the putative protective role of family-related variables (i.e., mother's, father's, both parents' control, and the frequency of family dinners). The study results support previous prevalence data (World Health Organization, 2018) and research (Chen & Jacobson, 2012; Schulte et al., 2009; Iwamoto & Smiler, 2013) by confirming that male adolescents tend to drink more often than females. In line with previous literature (Okulicz-Kozaryn, 2011), daughters perceived higher control by mothers, whereas sons perceived higher control by fathers. As hypothesized, parental control – separately measured for mother and father - resulted mediating the association between gender and adolescents' drinking, producing a reduction of this risk behaviour in line with previous evidence (Carroll et al., 2016; van der Vorst et al., 2006; Wilson et al., 2018; Yap et al., 2017). Family dinners attendance frequency, instead, did not impact on the relationship between the analyzed forms of parental control (i.e., mother's, father's, both parents' control) and last 30 days adolescents' alcohol consumption, for both boys and girls. Contrarily from what expected, it did not reinforce the effect of parental control in diminishing adolescents' drinking. This finding is consistent with Hoffman and Warnick's (2013) research, discouraging both CASA's enthusiasm as well as evidence about family mealtime reducing adolescents' drinking (Eisenberg et al., 2004; Abar et al., 2017).

The present research supplements the state of the art around family meals preventative effectiveness by investigating the effect of mother's, father's, and both parents' control with

family dinners' frequency in relationship to teenagers' alcohol consumption. Results from moderated mediation analysis lead to note that parental control in all the three investigated forms (i.e., mother's, father's, both parents') may effectively counteract adolescents' alcohol use, regardless of the frequency of family dinners. In other words, the variable describing the quality of parent-adolescent relationship – parental control - resulted effective against this risk behaviour without the expected strengthening effect of the frequency of family meals attendance, that quantitatively describes the parent-adolescent relationship. This contribution gains particular importance given that parental control was defined and operationalized in the present study as a form of parental awareness, according to Dishion and McMahon (1998), Kerr et al. (2010), and Stattin and Kerr (2000) conceptualization. Distancing from other definitions of parental control (Costa et al., 2016), the present framework assumed parental control to be the parent's level of awareness about her/his daughter's or son's everyday life. A trustful parent-adolescent relationship conveys this kind of awareness that derives from communication and support rather than coercive control. Hence, this result is encouraging for a variety of family configurations where parents cannot spend much time with their adolescent sons or daughters (i.e., full-time working parents, divorced parents, hospitalized parents). These parents can still ward adolescents' wellbeing from alcohol consumption by improving the quality of their mutual relationship. Indeed, adolescents' emotional health is related to parent-adolescent connectedness in terms of perceived parental caring, communication with parents about problems, and disclosing personal opinions and life-events (Ackard, Neumark-Sztainer, Story & Perry, 2006). Such characteristics in the relationship between the parent and the adolescent are relevant in preventing and reducing teenagers' unhealthy lifestyles (Harrison et al., 2015). Thus, parents remain a crucial source of socio-emotional support besides adolescents' natural necessity to affiliate with peers (Garmezy & Masten, 1994; Allen et al., 2008). Adolescents' wellbeing, mental health, life satisfaction, and self-esteem are determined

by secure attachment to parents (Armsden & Greenberg, 1987; Black & McCartney, 1997; Raja, McGee, & Stanton, 1992; Paterson, Pryor, & Field, 1995). Consistently with this perspective, research is promoting evidence-based interventions based on Bowlby's Attachment Theory (1969) (e.g., Connect Program by Moretti & Obsuth, 2009) aiming to enhance the socio-emotional quality of the relationship between parents and adolescents, with effective results in counteracting alcohol consumption and other at-risk behaviours (Giannotta, Ortega, & Stattin, 2013).

Limitations

The current research presents two main types of limitations. Firstly, limitations regarding the implemented methodology will be examined, providing hints for future directions in the research over adolescents, parental control, and alcohol consumption. Then, limitations in family dinners' assessment will be reviewed.

Methodological Limitations

Given that HBSC (2014) consists of a self-report protocol, this methodology is exposed to the risk of social bias (i.e., social desirability, acquiescence, attraction towards scale's extreme points) (Dicken, 1963). The integrative use of multi-informant procedures and qualitative interviews may overcome such issues. The specific geographical area of sample recruitment (i.e., Lombardy, a Nothern-Italian region) may also have influenced the generalizability of results. From a national perspective, this study reflects a contemporary social framework since adolescents from northern Italy have high rate of drinking (Asciutto et al., 2016). Future research should develop cross-regional to analyze the phenomenon through the lens of geographical differences within Italy.

On the other hand, the international generalizability of results may be impacted by cross-country cultural differences in eating habits. Nevertheless, extending the study focus from Northern Italy to national and international comparisons could represent an interesting

perspective to replay the investigation about family dinners and parental control interaction. In fact, research acknowledges that family dinners are important moments of communication and contact among family members all over the world and not only feeding and eating routines (Ochs & Shohet, 2006).

A third methodological limitation is low R-squared values in the moderated mediation models, that may be due to other intervening factors affecting the explained variance, that have not been deepened in the present study (Fairchild & MacKinnon, 2009) which primarily focused on the variables' interplay. Moreover, HBSC design did not allow to analyze the same statistical interactions in the three age ranges, since the measures of the variable of interest have been administered only among tenth graders. The HBSC cross-sectional design did not permit to analyze these effects longitudinally. Future research is encouraged to clarify the interplay of gender, parental control, family dinners, and alcohol consumption over time by implementing longitudinal studies or trend-analysis.

Finally, it is important to note that parental control index was obtained aggregating mother's and father's control, even if the correlation between the two variables was moderate (r=.54, p<.01). However, the Cronbach's α of the aggregated scale was .86, indicating high internal consistency reliability.

Family Dinners' Assessment Limitations

The current research contributes to the open debate around family meals' effectiveness in counteracting adolescents' risk behaviours, given that this variable did not turn to be a significant moderator between parental control and adolescents' alcohol consumption. Different reasons may have hampered the results' generalizability from previous research: the variety of scales measuring the frequency of family meals (daily or weekly), the confusion about which meals should be considered (breakfast, lunch, dinners), and the lack of qualitative research in the field. The present study was addressed at investigating the impact of family

dinners, because – differently from breakfast and lunch - this meal is more likely to involve the whole family. However, future studies may decide to investigate also the effect of breakfast and lunch to gain more knowledge over the variables' interplay. Given the lack of measures of the long-term effects of family mealtime, it is also advisable to longitudinally test family dinners moderation in the association between parental control and alcohol consumption.

Qualitative assessment should be also integrated with self-report procedures. Video-registered procedures could be relevant to understand the intrusive impact of smartphones, tablets, and tv during family mealtime experiences. Interestingly, research also pointed out that involving adolescents in the preparation of meals is associated with a more frequent attendance to family meals by teenagers (Berge, Draxten, Trofholz, Hanson-Bradley, Justesen & Slattengren, 2018), adding another crucial perspective for further understanding the impact of a shared-family routine on the youths' lifestyle. Future research may question the impact on alcohol consumption of other eating habits outside the family, such as when adolescents are not home (i.e., eating in school canteen, fast-food, picnics, etc.), or with family members (i.e., eating alone or with peers), and the modalities in which mealtime occurs (i.e., eating at a table, eating while walking in the streets, etc.)

Cultural context should also be taken into account when analyzing family mealtime habits. Although the main scientific production on the construct originates from the USA (i.e., Benedict et al., 1999; Griffin et al., 2000; Fukerson et al., 2006; Franko et al., 2008; Miller et al., 2012; Hoffman & Warnick, 2013), or from other Western countries (i.e., Levin et al., 2013 presented evidence from Scotland; Utter et al., 2013 presented evidence from New Zeland), and only a few scientific studies originates from Eastern countries (Shirawasa, Ochiai, Yoshimoto, Matoba, Sunaga, Hoshino & Kokaze, 2018), Italian culture and tradition represent a peculiar context to investigate eating habits, which could influence results generalizability.

Conclusion

This study explored the association between gender and adolescents' alcohol consumption, testing the influence of parental control and family dinners attendance. Males resulted to consume alcohol more frequently than females in the time-range of one month. Gender and alcohol association resulted significantly mediated by mother's, and father's control. Plus, mothers emerged to exercise higher control on daughters, while fathers' higher control was on sons. All the investigated forms of parental control (i.e., mother's, father's, both parents') resulted associated with a decrease in the adolescents' drinking frequency. Contrarily from what expected, the frequency of participation in family dinners, as a moment of shared routine, did not strengthen the effect of parental control in counteracting adolescents' alcohol use. This result encourages research to consider the superiority of quality over quantity when it comes to select which familial variables include in preventative programs against adolescents' alcohol use. In fact, the quality of parent-adolescent relationship emerged to reduce alcohol consumption by teens, regardless of the frequency of moments they spent together, such as family dinners. Parents' protective resource is monitoring their kids, and it results effective in reducing alcohol consumption by teens, even in contexts where parents do not share a daily routine with them (i.e., families with full-time working, hospitalized, divorced parents, etc.).

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Chapter II

Shared and Unique characteristics of Written and Visual Cyberbullying victimization in Adolescence

Abstract

Background: Research highlights the need for cyberbullying research to update taxonomies and states that adolescents perceive visual cyberbullying as more harmful than written cyberbullying. **Study aims**: The study investigates the commonalities and differences between visual and written cybervictimization in adolescence by exploring whether a constellation of variables (i.e., socioeconomic status, family support, family meals' frequency, quality of school relationships, psychosocial wellbeing, traditional bullying perpetration and victimization frequency, type of Internet activities) associates with general, visual, and written cyberbullying victimization. **Method**: The sample includes 3172 Italian adolescents (51.6% male, Mean age=13.7 years, SD=1.7), who completed the HBSC 2014 self-report protocol. Three logistic regression models have been conducted (i.e., for general, written, and visual cybervictimization). **Results**: Specific associated factors for general (i.e., gender, socioeconomic status, traditional bullying victimization, quality of school relationship, family support, psychosocial wellbeing, frequency of social network use), visual (i.e., traditional bullying victimization, traditional bullying perpetration, family meals frequency, family support, frequency of social network use), and written cyberbullying victimization (i.e., gender, traditional bullying victimization, psychosocial wellbeing, frequency of social network use, frequency of online video-gaming) have emerged. **Discussion**: Findings highlight the urgency of tailoring interventions for the specific forms of cyberbullying among adolescents.

Introduction: Defining Cyberbullying

The Internet provides users with new forms of socialization that might negatively or positively influence individuals' everyday life (Henderson & Gilding, 2004; Mesch & Talmud, 2006; Guan & Subrahmanyam, 2009). The Internet exposes adolescents and young adults to several risks, such as unwanted sexual solicitation (Valkenburg & Peter, 2011; Badillo-Urquiola, Chouhan, Chancellor, De Choudhary, & Wisniewski, 2020), Internet addiction (Young, 1998; Drouin & Miller, 2016), harassment and cybervictimization (Kiriakidis & Kavoura, 2010; Lingiardi, Carone, Semeraro, Musto, D'Amico, & Brena, 2019; Pittaro, 2020). Over the past decades, cyberbullying has substantially increased, raising public concern on its antecedents and consequences given its potential to negatively affect adolescents' health (Görzig & Frumkin, 2013; Hunter, Durkin, Boyle, Booth, & Rasmussen, 2014; Hellfeldt, López-Romero & Andershed, 2020).

For a long time, research has considered cyberbullying as a form of bullying via electronic devices (Olweus, 2012), which is widespread among children, adolescents, and young adults (Campbell, 2005; Atalay, 2020). However, the conceptual overlapping between bullying and cyberbullying has recently been questioned (Olweus & Limber, 2018). While traditional (i.e., face-to-face) bullying consists of aggressive targeted behavior, power imbalances, and repeated action patterns (Canty, 2016; Olweus & Limber, 2018), cyberbullying includes specific "*facets*" or indicators (Garaigordobil, 2011; Stewart, Drescher, Maack, Ebesutani, & Young, 2014; Olweus & Limber, 2018):

1. First, cyberbullying victimization may occur in the presence of multiple - known and unknown- Internet users, that become virtual "bystanders", not only in front of schoolmates or school personnel like in traditional bullying (Van Cong, Ngoc, Weiss, Van Luot, & Dat, 2018; Campbell, Whiteford, Duncanson, Spears, Butler, & Slee, 2020).

2. Second, cybervictimization can occur anytime and in any location, and victims cannot fight or escape as they could in face-to-face interaction. In particular, cyberbullies' attacks often occur while the victim is not aware of what is happening (Kowalski & Limber, 2007; Van Cong et al., 2018).

3. Third, cyberbullies may remain anonymous in cyberspace (Kowalski & Limber, 2007; Van Cong et al., 2018; Wright, 2020), or use false profiles to hide their identities, whereas this is not possible in face-to-face bullying.

4. Fourth, cyberbullying does not necessarily the repetitiveness that characterizes traditional bullying. Online-contents are located in multiple Servers, and they can be actively re-posted (e.g., in social networks) by Internet users all over the world (Buelga, Cava, & Musito, 2010; Van Cong et al., 2018). Reposting one content once implies that a single cybervictimization episode could be enough for victimizing a target repetitively.

The main taxonomies (Willard 2007; Smith, Barrio, & Tokunaga 2012; Redmond, Lock, & Smart, 2019), listed the following forms of cyberbullying: (i) *Flaming*: willfully provoking a quarrel with the victim on chats or forums; (ii) *Name-calling and denigration*: consisting in spreading unpleasant rumors or nicknames about the victim to make fun of him/her; (iii) *Threating*: suggesting to the target that something physically or psychologically harmful may happen to her/him; (iv) *Outing personal information*: revealing the target's private information, obtained by extortion or consensually confessed (the latter is often practice by the victim's ex-partners or ex-friends); (v) *Impersonation*: using the target's profile or email addresses to ruin her/his reputation; (vi) *Exclusion*: actively delete the target's access from chats (that often revolve around mocking him/her); (vii) *Cyberstalking*: following a person by using ICT (Internet Communication Technology) to monitor his/her daily habits and routines; (viii)

Revenge porn: non-consensually posting photos or videos of sexual nature to humiliate the victim (i.e., frequent between ex-partners with a majority of female victims).

Theoretically, several frameworks explain cyberbullying victimization (Espelage, Rao, & Craven, 2012): (a) the routine activity theory (RAT; Cohen & Felson, 1979), which describes cyberbullying as the sum of a target, a willful offender, and the absence of monitoring guardians; (b) the general strain theory (GST; Angew & White, 1992; Patchin & Hinduja, 2010), which defines cyberbullying perpetration as the result of accumulated frustration; (c) the social-ecological theory (Bronfenbrenner, 1977), which provides a context-based framework for both cyberbullying perpetration and victimization. Social-ecological theory (Bronfenbrenner, 1977) can help examine the commonalities and differences among different forms of cyberbullying victimization (i.e., visual and written cyberbullying victimization), allowing to consider associated factors from multiple domains or levels. Precisely, the first level is constituted of individual and microsystemic factors (relating to, e.g., gender, family, school, and peer interactions) that each individual directly experiences. Subsequently, the second level encompasses exosystemic and macrosystemic factors (e.g., external factors impacting on the family, culture, society, technology), that each individual indirectly experiences. According to this theoretical approach, a multidimensional understanding of the factors associated with cyberbullying victimization forms may help research in structuring primary, secondary, and tertiary strategies (Ashktorab, 2018) against specific forms of cyberbullying victimization.

Visual and Written cyber-victimization

Researchers proposed many classifications to describe cyberbullying because it is not a unidimensional construct (Vyawahare & Chatterjee, 2020). Since the pioneering taxonomy by Willard (2007), many behaviours are classified as cyberbullying (i.e., flaming, harassment, denigration, impersonation, outing/trickery, exclusion, and cyberstalking). Several studies also

support that adolescents may endure different types of aversive cyber-experiences (Baldry & Farrington, 1999; Menesini, Eslea, Smith, Genta, Giannetti, Fonzi, & Costabile, 1997; Del Rey, Casas, Ortega-Ruiz, Schultze-Krumbholz, Scheithauer, Smith, et al., 2015; Landoll, La Greca, Lai, Chan, & Herge 2015).

Specifically, four main types of cybervictimization have been identified: i). visual cybervictimization, ii). written cybervictimization, iii). impersonation or identity theft, iv). and online exclusion (Nocentini, Calmaestra, Schultze-Krumbholz, Scheithauer, Ortega, & Menesini 2010; Álvarez-García et al., 2017). This categorization was supported by empirical studies (Von Marées & Petermann, 2012; Zweig, Dank, Yahner, & Lachman, 2013). In particular, Menesini, Nocentini, and Calussi (2011) stressed out the importance of distinguishing visual cybervictimization (i.e., diffusion of photos or videos with unpleasant, intimate, violent content) from written cybervictimization (i.e., receipt of insults and pranks). In their study, adolescents have reported that the experience of visual cybervictimization was more aversive than the experience of written cybervictimization (Menesini et al., 2011). The perceived severity of visual cybervictimization might be explained in the light of adolescents' tendency to consider people they have met online as trustworthy persons. Thus, they easily send private visual content to online friends (Zemmels & Khey, 2015), feeling more hurt whether their trust is betrayed in visual cyberbullying episodes.

Visual cybervictimization involves the diffusion without consent of embarrassing pictures (Nocentini et al., 2010) or intimate photos and/or videos as it may occur in the context of sexting (Gámez-Guadix & Mateos-Pérez, 2019; Van Ouytsel, Lu, Ponnet, Walrave, & Temple, 2019), in the form of "*sextortion*" or revenge porn (Calvert, 2015). Furthermore, as reported by Alvarez-Garcia et al. (2017), the online dissemination of photos and videos of physical aggression and violence, named "*happy slapping*" (Palasinski, 2013), is also a form of visual cybervictimization. While a full consensus on the definition and operationalization of

"sexting" is lacking (Zemmels & Khey, 2015; Maheux, Evans, Widman, Nesi, Prinstein & Choukas-Bradley, 2020), the systematic review by Klettke, Hallford, and Mellor (2014) highlights the need for further investigation around visual cybervictimization and its associated factors during adolescence. Given this premise, greater insights into the factors that are shared and unique between visual (not exclusively sexual) and written cybervictimization, also comparing the two forms with general cybervictimization antecedents, may be crucial for providing a better understanding of the phenomenon.

Individual Differences in Cybervictimization

Several studies have shown gender differences in cyberbullying roles, with boys practicing cyberbullying more often than girls (Katzer, Fetchenhauer, & Belschak, 2009; Schultze-Krumbholz, Göbel, Scheithauer, Brighi, Guarini, Tsorbatzoudis et al., 2015; Baldry Farrington, & Sorrentino, 2017) and girls being cybervictimized more frequently than boys (Aboujaoude, Savage, Starcevic, & Salame, 2015; Alvarez-Garcia et al., 2017; Baldry et al., 2017; Zych, Ortega-Ruiz, & Marín-López, 2016). However, there is also evidence that boys are significantly involved in both cyberbullying and cybervictimization (Brown, Demaray, Tennant, & Jenkins, 2017). These contradictory findings suggest the need to further investigate the role of gender by looking at gender differences in visual and written cybervictimization.

Another traditionally investigated variable in bullying and cyberbullying studies is family socioeconomic status. According to Tippett and Wolke (2014), low socioeconomic status is only weakly associated with involvement in bullying. More generally, several authors have found a positive association between socioeconomic status and both cyberbullying and cybervictimization: boys and girls from families with higher economic income are more engaged in online bullying dynamics (Wang, Iannotti, & Nansel., 2009; Bevilacqua, Shackleton, Hale, Allen, Bond, Christie, et al. 2017; Beyazit, Şimşek, & Ayhan, 2017). It is possible to estimate that high family socioeconomic status may represent a risk factor for

cybervictimization, as it could provide adolescents with more tools to access the Internet, and thus enhance their risk of being exposed to cyberbullying. Nevertheless, the debate is still open: several studies (Chen, Lo, Zhu, Cheung, Chan, & Ip, 2018; Shaheen, Hammad, Haourani, & Nassar, 2018) have found that adolescents from low-income families are more involved in bullying and cyberbullying than peers from medium and high-income families. To date, the impact of family income on visual versus written cybervictimization needs further investigation.

Traditional Bullying and Cybervictimization

Another relevant issue in cybervictimization concerns the continuity between personal involvement in traditional bullying and involvement in cyberbullying. Several studies have shown outcomes consistent with the continuity hypothesis, stating that being a victim in traditional bullying dynamics is associated with being a victim in cyberbullying (Ybarra & Mitchell, 2004). Research has also highlighted that a substantial number of cyberbullying victims are harassed in cyberspace by real-life peers (i.e., friends, classmates) (Juvonen & Gross, 2008; Slonje & Smith, 2008). However, other theoretical contributions and studies stated that cyberspace could allow victims to become offenders (King, Walpole, & Lamon, 2007; König, Gollwitzer, & Steffgen, 2010; Chu, Fan, Liu, & Zhou, 2018). This perspective opposes the linearity found in the studies mentioned above, suggesting a role reversal hypothesis, in which the roles in offline and online bullying may change (i.e., traditional bullying victim becomes cyberbully, and bully becomes cybervictim). Indeed, cyberspace guarantees anonymity and asynchrony to bullies (Kowalski & Limber, 2007). This feature leads adolescents to express more offensively than they would otherwise do in face-to-face interactions (Ybarra & Mitchell, 2004) and may encourage victims of traditional bullying to seek revenge online (King et al., 2007; König et al., 2010; Chu et al., 2018). The Internet also stimulates online disinhibition (Suler, 2004), and the expression of accumulated anger (Agnew

& White, 1992; Patchin & Hinduja, 2010). Nevertheless, the continuity hypothesis and the role reversal hypothesis need to be furtherly investigated in association with visual or written cybervictimization.

Family Variables and Cybervictimization

The need to gain more independence from the parents is inherent in adolescence. Adolescents establish new affective bonds with same-age friends and affiliate with peer-groups (Erikson, 1959; Marcia, 1966, 1993; Nickerson & Nagle, 2005). However, experiencing new social and relational environments does not imply family becoming less important than it was during childhood. Garmezy and Masten (1994) stressed out that the influence of parents remains a constant in human development, especially when it comes to buffer and prevent adverse life events (e.g., risk behaviours such as substance use, alcohol consumption, delinquency).

Several studies have stressed the importance of family variables in understanding cybervictimization during adolescence. Scientific literature shows that traditional bullying victimization is associated with poor family communication (Smith & Myron-Wilson, 1998). Contrarily, a supportive family that provides guidance, encouragement, and acceptance (Baldry & Farrington, 2004; Steinberg, Lamborn, Dornbusch, & Darling, 1992) represents a protective resource against victimization. For instance, parental participation in adolescents' online activities represents a protective factor against cybervictimization, as parents constitute an active resource of communication and supervision of adolescent Internet use (Mesch, 2009). Moreover, recent research has found that family support and communication both mitigate the impact of cybervictimization on adolescents' wellbeing (Ortega-Baron, Buelga, & Cava, 2016) and serve as protective factors against its adverse effects (Buelga, Martínez-Ferrer, & Musitu, 2016; Yiğit, Keskin, & Yurdugül 2018; Moreno–Ruiz, Martínez–Ferrer, & García–Bacete 2019; Hellfeldt, López-Romero, & Andershed, 2020).

In the framework of a strong inter-connection between family system, life-events and the ongoing psychosocial development in adolescence (Szapocznik & Williams, 2000), moments of togetherness within the family, such as shared meals, have emerged to constitute another protective factor against adolescents' cyberbullying and development of other risk behaviours (Fulkerson, Story, Mellin, Leffert, Neumark-Sztainer, & French, 2006; Elgar, Craig, & Sj, 2013; Elgar, Napoletano, Saul, Dirks, Craig, Poteat et al., 2014). Research on nutrition has highlighted a link between skipping meals and victimization and cybervictimization (Sanders, 2019), allowing to hypothesize a possible association between lack of family routine and risk of cybervictimization. However, the protective role of family meals against cybervictimization and other risk behaviours has been argued ineffective due to the confounding effect of other family variables, such as family coherence (Goldfarb, Locher, Preskitt, Becker, Davies, & Sen, 2017). Since the debate over the effectiveness of family meals in counteracting cybervictimization remains open, further attention to the relationship between this factor and visual and written cybervictimization may be beneficial in generating additional insight into the phenomenon.

Quality of Relationships at School and Cybervictimization

During adolescence, the importance of peer support - especially in the school environment - grows in line with the drive to gain independence from family caregivers (Wilkinson, 2004). Research has shown that friendship moderates the consequences of traditional bullying victimization. Friendship both relieves and decreases victims' depression and anxiety symptomatology (Holt & Espelage, 2007). Social support from peers also reduces traditional bullying and cyberbullying victimization experience in the adolescent's life (Wang & Janotti, 2011; Hellfeldt et al., 2020), while peer rejection increases the likelihood of cybervictimization episodes (Espinoza, 2018). These data reproduce the evidence on the association between adolescents' social rejection and aggressive behavior at school (Orobio de

Castro, Slot, Bosch, Koops, & Veerman 2003), supporting the continuity hypothesis between traditional bullying and cyberbullying dynamics.

In the last decade, anti-bullying and anti-cyberbullying studies have supported the crucial role of teachers (Macaulay, Betts, Stiller, & Kellezi, 2018; Stewart & Fritsch, 2011; Hellfeldt et al., 2020) in spotting and counteracting these phenomena (Macaulay et al., 2018; Monks, Mahdavi, & Rix, 2016). Thus, in light of the social control theory (Hirschi & Gottfredson, 1993), the presence of monitoring guardians is crucial in preventing aggressive behaviours. Positive and supporting relationships with teachers have been demonstrated to counteract adolescents' cybervictimization (Doty, Gower, Rudi, McMorris, & Borowsky, 2017; Pabian & Vandebosch, 2016). Still, the specific role of school relationships (i.e., relationship with teachers and classmates) in explaining both visual and written cybervictimization needs to be clarified.

Psychosocial Wellbeing and Cybervictimization

Psychosocial wellbeing consists of positive inter- and intra-individual functioning, in terms of perceived closeness to others and self-directed attitudes (Burns, 2017). Regarding psychosocial resources, evidence suggests that both cyberbullies and cybervictims present lower psychosocial wellbeing than other teenagers (Ates, Kaya, & Tunçet, 2018). As observed in traditional bullying victimization (Fox & Boulton, 2005), poor psychosocial wellbeing, especially in terms of perceived loneliness, is associated with higher cybervictimization (Şahin, 2012; Larrañaga, Yubero, Ovejero, & Navarro, 2016; Olenik-Shemesh, Heiman, & Zuaretz-Hannan, 2017). Nevertheless, psychosocial wellbeing still needs to be examined in association with different cybervictimization forms (e.g., visual and written).

Internet Use Habits and Cybervictimization

As a deviant act, cyberbullying relies on the convergence of three factors: a suitable target, a motivated offender, and the absence of monitoring guardians (Cohen & Felson, 1979; Hirschi & Gottfredson, 1993; Navarro & Jasinksi, 2012). In this framework, time spent online alone by adolescents may constitute the principal risk factor for cybervictimization. Though, in line with research investigating the association of cyberbullying, problematic Internet use, and Internet addiction (Gámez-Guadix, Orue, Smith, & Calvete, 2013; Jung, Leventhal, Kim, Park, Lee, Lee et al., 2014), the frequency of Internet use seems to constitute only a partial explanation for this association. Research has focused on the various types of online activities in which adolescents are engaged (Gamito, Morais, Oliveira, Brito, Rosa, & de Matos, 2016; Coyne, Padilla-Walker, Holmgren, Davis, Collier, Memmott-Elison, & Hawkins, 2018) to gain a deeper understanding of the relationship between Internet use and involvement in cyberbullying. For example, it has been shown that adolescents who make extensive use of social networks are also the most involved in cyberbullying (Park, Na, & Kim 2014; Barlett, DeWitt, Maronna, & Johnson, 2018). Contrarily, adolescents who actively game online are less frequently involved (Mesch, 2009).

However, a growing body of evidence supports that attending online gaming environments may constitute a risk factor for cybervictimization (Chang, Chiu, Miao, Chen, Lee, Huang, & Pan, 2015; Fryling, 2018; Qing, 2015). Many gaming platforms present chats to exchange comments between gamers, and also flaming and offensive contents (Hilvert-Bruce & Neill, 2020). To date, it is still unclear which of these online activities (e.g., social network use vs. online gaming) is riskier than another and if the use of social networks and online gaming are distinctively associated with the visual and written cybervictimization.

Aims and hypotheses

In light of the evidence described above, the present study aims at shedding light on the antecedents of cybervictimization in a sample of Italian adolescents, addressing the commonalities and differences between visual and written cybervictimization. Specifically, the following hypotheses were explored:

1. A specific constellation of hierarchically ordered factors (i.e., being female, having a lower family income, being more frequently involved in traditional bullying [as a victim and/or a bully], lower frequency of participation in family meals, lower quality of relationships at school [with classmates and teachers], lower family support, lower psychosocial wellbeing, more frequent use of social networks, and more frequent online video-gaming) would be associated with more episodes of cybervictimization.

2. The same set of factors would be separately studied in association with both forms of cybervictimization (i.e., written and visual).

Method

Sample

The present research used the self-report data of 3,172 adolescents from Lombardy, Italy (51.6% boys, M_{age} = 13.74, SD = 1.70), as reported in 2014 dataset. The estimated sample size for each age range at the time of the survey administration was 1,200. However, due to the lack of school participation in the project, adolescents' absence from school, and family consent, the final sample consisted of 1,113 11-years-old students, 1,153 13-years-old students, and 906 15-years-old students. Socio-demographic characteristics, as well as the means and standard deviations of the study variables, are displayed in Table 1.

Table 1.

Descriptive Statistics of Study Variables

Variable	Frequency (N = 3172)		
Gender			
Male	1,637		
Female	1,535		
Visual cyberbullying victimization			
Cybervictimized (via photo) at least once over the past 2 months	204		
Not cybervictimized (via photo) over the past 2 months	2,968		
Written cyberbullying victimization			
Cybervictimized (via message) at least once over the past 2 months	2,868		
Not cybervictimized (via message) over the past 2 months	304		
Family support		M=4.58	SD=.07
Low	409		
Medium low	193		
Medium	202		
Medium high	501		
High	1,867		
Family meals Frequency		M=4.45	SD=1.17
Never	49		
Less than once a week	143		
1–2 times a week	907		
3–4 times a week	883		
5–6 times a week or more	1,19		
Quality of school relationship		M=2.89	SD=.32
Low	2,836		
Medium	334		
High	2		
Psychosocial wellbeing		M=3.46	SD=.06
Low	63		

Medium Low	407		
Medium	2,096		
Medium High	586		
High	20		

Bullying perpetration		M=1.24	SD=.64
Never	2.64		
Once or twice	397		
Two or three times per month	70		
Several times per week	65		

Bullying victimization		M=1.29	SD=.75
Never	2.609		
Once or twice	380		
Two or three times per month	79		
Several times per week	104		

Family Affluence Scale (FAS)		M=2.66	SD=.76
Low	179		
Medium low	1,184		
Medium high	1,398		
High	411		

Social network use		M=2.75	SD=1.09
Always	601		
Often	1,869		
Seldom	323		
Never	379		

Video gaming online		M=1.99	SD=1.01
Always	203		
Often	376		
Seldom	1,79		
Never	803		

Note. FAS = Family Affluence Scale. Family Support Index mean scores were categorized into five levels using a 7:5 distribution ratio. Quality of School Relationship Index mean scores were categorized into three levels using a 5:3 distribution ratio. Psychosocial wellbeing scores were categorized into five levels using a 5:5 distribution ratio. Family support scores were categorized into five levels using a 7:5 distribution. Family Affluence Scale scores were categorized into four quartiles (see Currie et al., 1997; Currie et al., 2008).

Procedure

The HBSC protocol (2013–2014) was administered in Italy thanks to the synergy among the University of Turin, National Research Co-ordinance Center, in collaboration with the Local Prevention Network, the Regional School Office, the Local School Offices, and regional local medical and prevention services (ATS). As HBSC is included in the project "Sistema di sorveglianza sui rischi comportamentali età 11-17 anni" (Surveillance System over risk behaviours between 11 and 17 years); ethical approval was given to HBSC protocol on the 15th September 2009 (Prot.PRE-414/09). Furthermore, the Ethical Committee of University of Turin, which was coordinating 2014 data collection, approved the protocol on the 26th September 2013.

As mentioned in the "General Introduction", cluster sampling was implemented on the complete alphabetically ordered list of public and private schools in the Northern Italian Region of Lombardy. According to international guidelines, the protocol investigated three age-ranges (i.e., 11, 13, and 15 years). Classes were stratified by age to cover the distribution of adolescents in each age range geographically. Alongside, the administration was conducted on three clusters of classes equivalent to the survey age-ranges: sixth-grade class (1,113 participants), eight-grade class (1,153 participants) (respectively corresponding to first and third class of the middle school in the Italian school system), and tenth-grade in high-school (906 participants) (corresponding to the second class of high school in the Italian school system).

The HBSC survey protocol was administered in each classroom by health service operators and the completion time took 60 minutes. Research approval was sought from the Italian Ministry of Education and Research (MIUR). Before the survey administration, the research was submitted to the school boards for approval. Initially, school authorities informed families about the research objectives and procedures. Parents also formally allowed minors to

participate in the procedure by providing consent documentation. Every participant was guaranteed confidentiality around his/her data.

Measures

Cybervictimization. Cybervictimization was measured using two items adapted from the Olweus Bully/Victim Questionnaire (Solberg & Olweus, 2003), that were included in the HBSC protocol. Before answering, the participant read a short definition of bullying and cyberbullying. *Written cybervictimization* was measured by counting how often participants had experienced being sent mean messages through chat, computer, SMS, or online websites in the last two months (e.g., "How often have you suffered from bullying through chat, computer, SMS, or online websites?"). *Visual cybervictimization* was measured by counting the frequency with which adolescents had someone taking and sharing online photographs of them without permission the last two months (e.g. "How often have you suffered from bullying through photos shared online?"). Answers were given on a five-point Likert scale ranging from 1 (*never*) to 4 (*several times a week*). For each form of cybervictimization (written and visual), a dichotomous variable was calculated (with 1 = *cybervictimized [at least once in the past two months]* and 2 = *not cybervictimized*). This condition was attributed to all other answer scores on the Likert scale (for the same dichotomization method, see Chan, La Greca, & Peugh, 2019; Del Rey et al., 2015; Del Rey, Ortega-Ruiz, & Casas, 2019; Landoll et al., 2015; Menesini, Nocentini, Palladino, Frisén, Berne, Ortega-Ruiz et al., 2012). The mean of the two items' was computed to investigate also in a comprehensive index of cybervictimization (correlation r = .27, p < .001).

Perception of socioeconomic status. The second version of the Family Affluence Scale (FAS; Currie, Elton, Todd, & Platt, 1997; Currie, Molcho, Boyce, Holstein, Torsheim, & Richter, 2008), included in HBSC protocol, measured the living conditions of the family group, reflecting adolescents' perception of their family's socioeconomic situation. Participants

provided information on their family's material belongings (e.g., number of cars, number of computers, and number of bathrooms, as well as whether they had a dishwashing machine and a single bedroom for each adolescent) and activities (e.g., family holidays overseas) (e.g., "Does your family own a car, van or truck?"). Answers were provided on a 4 Likert scale ranging from 1 (*no*) to 2 (*yes, one*), 3 (*yes, two*), 4 (*more than two*).

Family support. A subscale of the Multidimensional Scale of Perceived Social Support (MSPSS) (Zimet, Dahlem, Zimet, & Farley, 1988), included in the HBSC survey, was administered to measure perceived family support through four statements (i.e., "My family really tries to help me," "I get the emotional help and support I need from my family," "I can talk about my problems to my family," and "My family is willing to help me make decisions."). Answers were ordered on a 7-point Likert scale ranging from 1 (*very strong disagreement*) to 7 (*very strong agreement*). Cronbach's α was .89.

Family meals attendance. Family meals (breakfasts and dinners) were assessed using two items ("How often do you have breakfast with your mother or with your father?" and "How often do you have dinner with your mother or with your father?"), which asked participants to rate frequency as 1 (*never*), 2 (*less than once a week*), 3 (*1–2 times per week*), 4 (*3–4 times per week*), 5 (*5–6 times per week*), or 6 (*daily*). Due to the significant association between items (*r* = .17, *p* < .001), the mean was computed as a total index of attendance to family meals.

School relationships with teachers and peers. Four items were administered to measure adolescents' perceived relationship quality with teachers within the school environment. Participants were asked if their teachers accepted them if they cared about their teachers, if they could trust their teachers, and if they felt treated with fairness by their teachers. Answers were ordered on a five-point Likert scale ranging from 1 (*total agreement*) to 5 (*total disagreement*). Cronbach's α was .79. Three further items were administered to measure adolescents' perceived peer relationships within the school environment, asking them if

students in their classes enjoyed being with them, if students in their classes were kind and helpful, and if other students accepted them for who they were. Again, answers were ordered on a five-point Likert scale ranging from 1 (*total agreement*) to 5 (*total disagreement*). Cronbach's α was .78. Given the significant association between the quality of relationships with teachers and the quality of relationships with peers ($r = .31$, $p < .001$), a total score of relationship quality at school was calculated from an average of the item scores.

Psychosocial wellbeing. Six items measured psychosocial wellbeing (relative to the week prior to the administration of the questionnaire). Participants were asked to rate on a Likert scale ranging from 1 (never) to 5 (always), how frequently they felt low energy, sad, or alone; the amount of time they had for themselves; and the frequency with which they were able to do what they liked and enjoy time with friends. Cronbach's α was .83.

Frequency of involvement in bullying. Two items assessed traditional bullying perpetration ("How often did you participate in bullying against another student at the school in the last two months?") and victimization ("How often did you suffer from bullying at school in the last two months?") on a Likert scale ranging from 1 (*never*) to 4 (*several times a week*). Before answering, the participant read a short definition of bullying.

Internet-specific activities. Participants were asked to report the frequency with which they practiced two specific activities on the Internet (i.e., use of social networks, video-gaming) on a six-point Likert scale, as follows: 1 (*always*) to 4 (*never*). The scale was reversed to facilitate statistical analysis.

Analytic Plan

Data analysis was conducted using the IBM Statistical Package for Social Science (SPSS), version 20. A logistic regression model with frequency of cybervictimization as the dependent variable was implemented to test the first hypothesis. Blocks of independent variables were inserted in the following order: block 1 included participant gender and FAS;

block 2 included traditional bullying experiences (i.e., frequency of victimization, frequency of bullying); block 3 included social protective factors (i.e., frequency of family meals, quality of relationships at school, family support); block 4 included psychosocial wellbeing; and block 5 included the frequency of use of social networks and the frequency of online video-gaming., two further logistic regression models were run with the same independent variables to examine the shared and unique factors associated with written and visual cybervictimization.

Results

Pearson product-moment correlations between study variables have been computed (Table 2). Three hierarchical logistic regression models were run, each for a type of cybervictimization (i.e., cybervictimization, written cybervictimization, visual cybervictimization) (see Table 3).

Table 2.

Associations Among Study Variables calculated as Pearson's product-moment correlations (n = 3,172).

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1. **Cybervictimization**	1											
2. **Written cyberv.**	.85***	1										
3. **Visual cyberv.**	.72***	.27***	1									
4. **FAS**	.03*	.02	.04*	1								
5. **Victimization**	.27***	.26***	.15***	-.04*	1							
6. **Bullying**	.07***	.02	.10***	.01	.17***	1						
7. **Family meals**	-.02	-.04***	.01	.06***	-.03	-.03	1					
8. **School Rel.**	-.11***	-.12***	-.06**	.00	-.18***	-.12***	.24***	1				
9. **Family support**	-.09***	-.08***	-.07**	.02*	-.09***	-.07***	.31***	.38***	1			
10. **Psychosocial wellbeing**	-.10**	-.11***	-.04**	.07***	-.13***	.01	.14***	.29***	.31***	1		
11. **Social network use**	.08***	.07***	.05**	.01	.01	.07***	-.09***	-.07***	-.06**	-.05**	1	
12. **Video-gaming online**	.02	.03	.01	-.01	.05**	.07***	.05**	.07***	.06**	.17***	-.01	1

Notes. FAS = Family Affluence Scale. *p < .05; **p <.01; ***p < .001.

Table 3 reports values from block 5. With regard to cybervictimization (Model 1) gender, $\beta = .39$, $p < .01$, bullying victimization $\beta = .44$, $p < .001$, family affluence, $\beta = .05$, $p = .018$, more frequent use of social network sites, $\beta = .27$, $p < .001$, as well as less positive school relationships, $\beta = -.24$, $p < .05$, lower family support, $\beta = -.10$, $p < .05$, and lower adolescents' psychosocial wellbeing, $\beta = -.27$, $p < .01$, were associated with more frequent cybervictimization. The frequency of perpetrated bullying episodes, $\beta = .07$, $p = .27$, family meals, $\beta = .09$, $p = .05$, and gaming, $\beta = .13$, $p = .06$, showed no significant effect. Overall, the model explained 10% of the variance (Nagelkerke $R^2 = .10$) (see Table 3).

When written cybervictimization was considered (Model 2) gender, $\beta = .41$, $p < .01$, more frequent episodes of victimization, $\beta = .48$, $p < .001$, use of social network sites, $\beta = .22$, $p < .01$, and gaming, $\beta = .19$, $p < .05$, as well as lower adolescents' psychosocial wellbeing, $\beta = -.39$, $p < .001$, were associated with more frequent cybervictimization. No significant effects were found for family affluence, $\beta = .04$, $p = .09$, frequency of bullying, $\beta = -.04$, $p = .60$, or family meals, $\beta = .05$, $p = .35$, or for levels of family support, $\beta = -.06$, $p = .19$. Overall, this model explained 9% of the total variance (Nagelkerke $R^2 = .09$).

Finally, when visual cybervictimization was considered, adolescents' more frequent victimization, $\beta = .27$, $p = .001$, bullying episodes, $\beta = .23$, $p < .01$, family meals, $\beta = .22$, $p < .01$, and use of social network sites, $\beta = .26$, $p < .01$, as well as lower family support, $\beta = -.17$, $p < .01$, were associated with more frequent cybervictimization. No significant effects emerged for gender, $\beta = -.10$, $p = .53$, family affluence, $\beta = .06$, $p = .06$, the quality of school relationships, $\beta = -.21$, $p = .09$, adolescents' psychosocial wellbeing, $\beta = -.13$, $p = .31$, or frequency of gaming, $\beta = .07$, $p = .43$. Overall, the model explained 6% of the total variance (Nagelkerke $R^2 = .06$).

Table 3.

Logistic Regression models predicting cybervictimization, written cybervictimization and visual cybervictimization (n = 3,172).

Variables	Cybervictimization			Written Cyberv.			Visual Cyberv.		
		95% IC			95% IC			95% IC	
Step 5	*β*(SE)	Lower	Upper	*β* (SE)	Lower	Upper	*β* (SE)	Lower	Upper
Gender	.39**(.12)	1.17	1.89	.41**(.14)	1.15	2.00	-.10(.16)	0.65	1.24
FAS	.05*(.02)	1.01	1.11	.04(.02)	.99	1.11	.06(.03)	0.99	1.13
Victimization	.44***(.05)	1.40	1.75	.48***(.06)	1.44	1.83	.27***(.07)	1.13	1.52
Bullying	.08(.07)	.93	1.26	-.04(.09)	.79	1.14	.23*(.08)	1.06	1.50
Family meals	.09(.05)	.99	1.21	.05(.05)	.94	1.18	.22**(.06)	1.09	1.43
School Rel.	-.24*(.09)	.65	.94	-.18(.10)	.67	1.02	-.21(.12)	.63	1.03
Family support	-.10*(.04)	.83	.97	-.06(.04)	.86	1.03	-.17**(.05)	.75	.92
Psych. wellbeing	-.27*(.09)	.62	.92	-.39**(.11)	.54	.84	-.13(.13)	.67	1.13
SNs'use	.27***(.06)	.66	.87	.22*(.07)	.68	.92	.26**(.09)	.64	.92
Video-gaming	.13(.07)	.76	1.00	.19*(.08)	.70	.96	.07(.09)	.89	1.3

Notes. FAS = Family Affluence Scale; SNs= Social Networks. *$p < .05$; **$p < .01$; ***$p < .001$. β(SE)= regression coefficient (Standard Error). Gender: Male=1, Female=2. FAS: 1=low, 4=high; frequency of Victimization: 1=never, 4=several times per week; frequency of Bullying: 1=never, 4=several times per week; Family meals frequency: 1=never, 6=daily; (Quality of) School Relationship: 1=total dissatisfaction, 5=total satisfaction; Family Support: 1=absence of support, 7=high perceived support; Psychosocial wellbeing: 1=low, 4=high. Frequency of SNs' and Video-gaming: 1=never, 4=always. For Cybervictimization, Visual Cybervictimization and Written Cybervictimization: 1 = cybervictimized in the past two months and 2 = not cybervictimized in the past two months.

Discussion

The present study aimed at shedding light on the antecedents of cybervictimization in a sample of Italian adolescents, and at addressing the commonalities and differences between visual and written cybervictimization disentangling factors specifically associated with the two forms. The associated factors of cybervictimization, written cybervictimization, and visual cybervictimization will be discussed in the following paragraphs.

Factors Associated with Cybervictimization

As highlighted by previous studies, girls are victims of a higher number of cybervictimization episodes (Aboujaoude et al., 2015; Zych et al., 2016; Alvarez-Garcia et al., 2017; Baldry et al., 2017). A higher family income also resulted to increase the likelihood to be cybervictimized (Wang et al., 2009; Bevilacqua et al., 2017; Beyazit et al. 2017). Concerning traditional bullying, victimization in real life was found to constitute a risk factor for cybervictimization, confirming the continuity hypothesis between offline and online bullying dynamics (Ybarra & Mitchell, 2004). On the other hand, cybervictimization was not found to relate to the frequency of real-life bullying, refuting the hypothesis of König (2010) and King (2007), which holds that cyberinteractions reverse traditional bullying roles (i.e., bullied adolescents use the Internet to seek revenge or to let off steam).

The results around family factors were controversial. In accordance with previous studies (see, e.g., Ortega-Baron et al., 2016; Hellfeldt et al., 2020), family support was found to relate to reduced cybervictimization. However, regarding the frequency of family meals attendance, the expected result based on literature (Elgar et al., 2013, 2014; Fulkerson et al., 2006) was not replicated. The absence of a significant relation between cybervictimization and frequency of family meals may have been due to the confounding effects of other family variables (e.g., family coherence), as noted by Goldfarb et al. (2017). Another consideration about the inconsistency of the relation between cybervictimization and frequency of family meals regards the measure of family meals. In the present study, family meals were quantitatively measured, in terms of frequency per week, without a focus on the quality of the shared routine (e.g., use of smartphones by family members, presence of a switched-on television). A qualitative investigation of this relationship could further contribute to the debate around the effectiveness of family meals in reducing the risk of cybervictimization.

The quality of school relationships with peers and teachers constitutes another crucial social resource that resulted negatively related to cybervictimization, suggesting the importance of such positive relationships in counteracting not only traditional bullying behaviors, but also cyberbullying (Hodges & Perry, 1999; Wang & Janotti, 2011; Pabian & Vandebosch, 2016; Doty et al., 2017; Hellfeldt et al., 2020). Additionally, psychosocial wellbeing was found to be negatively associated with cybervictimization, in line with prior evidence that social acceptance, comfort, and personal happiness may play a critical role in reducing the likelihood of cybervictimization (Larranga et al., 2016; Olenik-Shemesh et al., 2017; Şahin, 2012).

Regarding specific Internet activities in association with cybervictimization, the findings of the present research are consistent with the literature showing that adolescents who frequently use social network sites were at higher risk of cybervictimization (Bartlett et al., 2018; Park et al., 2014). Plus, in contrast to the findings of Chang et al. (2015), Fryling et al. (2015), Qing et al. (2015), and Hilvert-Bruce and Neill (2020) the frequency of video-gaming online did not represent a factor associated with cybervictimization, drawing a line between the specific online activities able to constitute a real risk factor.

Commonalities and Differences Between Written and Visual Cybervictimization

Both commonalities and differences emerged between written and visual cybervictimization. Focusing on the commonalities, neither written nor visual forms showed any association with family socioeconomic status, in contrast with previous studies on the associations between cybervictimization and family income (Wang et al., 2009; Bevilacqua et al., 2017; Beyazit et al. 2017). No significant relationship resulted between the two forms of cybervictimization (visual and written) and the quality of school relationships, contrarily to what emerged in literature for cybervictimization as a comprehensive form (Hodges & Perry, 1999; Wang & Janotti, 2011; Pabian & Vandebosch, 2016; Doty et al., 2017; Hellfeldt et al.,

2020). Moreover, both forms showed an association with traditional bullying victimization, supporting the idea that the continuity hypothesis of Ybarra and Mitchell (2004) may explain both visual and written cybervictimization.

Interestingly, only written cybervictimization resulted associated with being female, whereas being female was not associated with visual cybervictimization. This data is not in line with previous literature about females being more exposed to cybervictimization (Aboujaoude et al., 2015; Alvarez-Garcia et al., 2017; Baldry et al., 2017; Zych et al., 2016) and needs further examination. Moreover, only written cybervictimization was associated with poorer psychosocial wellbeing, suggesting a putative link between perceived loneliness and poor health with this form of cybervictimization, as previous literature pointed out in regards to cybervictimization as a comprehensive form (Şahin, 2012; Larranga et al., 2016; Olenik-Shemesh et al., 2017). Further studies should shed light on the existence of a relation between psychosocial wellbeing and visual cybervictimization, as Menesini et al. (2011) pointed that adolescents perceive this type of cyberbullying aggression more harmful than written cybervictimization.

Differences between the two forms of cybervictimization also highlighted the role played by real-life bullying perpetration - not only victimization - in experiencing visual cybervictimization. In fact, only visual cybervictimization resulted significantly associated with bullying perpetration. This evidence can be discussed in the light of König's (2010) and King's (2007) interpretation of cyberspace as a protected place for victims of traditional bullying to reverse roles (i.e., from victims in real life to bullies in cyberspace), with the disinhibition of behavior encouraged by the medium of Internet (Suler, 2004). It is possible to speculate that peers perpetrate visual cybervictimization as an act of revenge against real-life bullying, in conformity with literature reporting that cyberbullying is enacted among real-life peers under anonymity or pseudonyms (Juvonen & Gross, 2008; Slonje & Smith, 2008; Wright,

2020). In this way, the distribution of mocking photos online may feel less personal than writing something negative about another person online, and it may thus sustain beliefs of anonymity and safety in the cyberbully.

Although frequently using Social Network sites resulted associated with both forms of cybervictimization confirming precedent findings (Park et al., 2014; Barlett et al., 2018), it remains unclear whether different social networks have a different influence on visual and written cybervictimization. Future research is needed to fully address this issue, investigating whether Twitter is more suited for verbal exchanges and then more likely to be the setting of written cyberbullying victimization, whereas Instagram is optimized for image and video sharing and then more likely to be the ideal background of visual cybervictimization. Online gaming, instead, was only related to written cybervictimization, partially confirming previous literature (Chang et al., 2015; Fryling et al., 2015; Qing et al., 2015; Hilver-Bruce & Neill, 2020). This finding can be explained by the presence, in many gaming platforms, of chat-systems, that put opponents in direct contact during the challenges of the game.

Finally, considering family-related variables, lower family support was only related to visual cybervictimization, confirming previous literature about cybervictimization as a comprehensive form (Ortega-Baron et al., 2016; Buelga et al., 2016; Ygit et al., 2018; Moreno et al., 2019; Hellfeldt et al., 2020). Unexpectedly, a positive association between family meals' frequency and visual cybervictimization emerged. The lack of longitudinal data does not allow to detect a causal relation between the two factors, leaving an open question for future studies (e.g., Do the adolescents, who experienced visual cybervictimization, want to engage more shared moments with parents as a source of comfort?).

Limitations and Implications

The current study presented several limitations. Firstly, the HBSC self-report protocol is exposed to the risk of misinterpretations and of completion bias (Dicken, 1963). To further

investigate the two forms of cybervictimization, future research may consider the use of also qualitative methods, that would allow adolescents to describe their experiences of cybervictimization more in depth, controlling for the risk of self-report administration. Second, since the survey was administered in classrooms, the presence of classmates, who may be implied in traditional bullying dynamics within the class, could have impacted the survey completion, with participants from the same class likely influencing each other. Such a limit could be overcome by administering the survey to random groups of participants of the same age, within each sampled school. Statistically, it is recommendable for similar studies to implement mixed multilevel models to detect the effect of class-group and school. Given the number of schools (n=140), and classes (n=210) of the present HBSC sample, plus the inclusion of ten independent factors in the logistic regression models, mixed multilevel models were not performed in this study to avoid hyperparametrization (Bates, Kliegl, Vasishth, & Baayen, 2015). Third, the HBSC research protocol lacked a longitudinal design and thus did not facilitate the interpretation of trends in the study's variables.

Finally, the logistic regression models presented low R squared values (R Nagelkerke). Since is possible to speculate that other intervening factors explained variance, it is recommendable for future research to develop structural equation model analysis, in order to shed light on latent variables explaining the outcome (Ullman & Bentler, 2003). In this study, as pointed out by research on statistical methods (e.g., machine learning) for cyberbullying detection (Rosa, Pereira, Ribeiro, Ferreira, Carvalho, Oliveira et al., 2019), low explained variance is possibly due to the descriptive characteristics of the sample, since the number of non-cyberbullied participants was higher than the number of cyberbullied participants for both forms of cyberbullying victimization. However, it is worth noting that R squared values in logistic regression does not assume the same meaning as in linear regression (Long, 1997). R squared provides an overall evaluation of the model as a classifier but does not strictly

correspond to predictive efficiency of the coefficients' estimation, in an inferential framework (Menard, 2000; Peng, Lee, & Ingersoll, 2002).

However, future research should consider replicating the study by adding other independent variables predicting cyberbullying victimization (e.g., personality traits, externalizing and internalizing problems, cognitive style) as stated by Guo's metanalysis (2016). Additionally, the study did not include age in the regression given the prevalence data of 2014 showing that cyberbullying peaks among Italian children aging between 11 and 16, the same age range of HBSC focus (Mascheroni & Cuman, 2014). For future study it is recommendable to consider age as an independent factor, according with national prevalence data about cyberbullying in adolescence.

Besides these limitations, the present contribution provided several cues for professionals (e.g., psychologists, teachers, school counselors) to structure preventative and intervention strategies tailored to the different factors associated with different forms of cybervictimization. Since various factors are related to both cybervictimization (as a comprehensive form) and specific forms of visual and written cybervictimization, it is reasonable to differentiate preventative and intervention programs to obtain significant effects. Moreover, the research investigated factors from multiple contextual dimensions (i.e, individual, microsystemic, exosystemic, macrosystemic) of social-ecological theory (Bronfenbrenner, 1977), that may result useful in tailored strategies of primary, secondary, tertiary prevention (Ashktorab, 2018). The present study contributes to spreading knowledge about the multi-contextual nature of cyberbullying victimization, since multiple factors associated with visual and written cybervictimization on all levels of Bronfenbrenner's model (1977). These results underlined the importance of a multi-contextual perspective in prevention and intervention against cyberbullying, as it has been argued for traditional bullying (Menesini, 2019). Finally, as literature is moving towards re-conceptualizations in the cyberbullying field (Olweus &

Limber, 2018), the present research underlines the urgency to distinguish written and visual cybervictimization to effectively safeguard new generations. This reconceptualization may contribute to the creation of programs counteracting cyberbullying, or it could help in ameliorating already existing evidence-based programs. In particular, the results may impact on the Kiva program by Kärnä et al., (2011) – that is focused on bystanders' action – by training adolescents to recognize different form of cybervictimization and their associated variables. By the same token, taking into account the specific experiences of visual and written cybervictimization may be critical in the initial awareness meeting of the No!Trap program by Palladino, Nocentini e Menesini (2016).

Conclusion

The present research replicated previous studies about some associated factors of cybervictimization. Moreover, it is one of the pioneering studies to have tested how the antecedents of cyberbullying victimization were distinctively associated with visual and written forms of cybervictimization. Namely, separating written and visual cyberbullying victimization, contribute to literature's open debates around the necessity to revise the operationalization of cyberbullying. Plus, it may also encourage further research considering which specific internet environments convey the distinct cybervictimization forms (e.g., Twitter, Whatsapp, Telegram, Tick-Tock, Instagram, Facebook, gaming platforms).

As a comprehensive form, cybervictimization resulted associated with being female, having a higher family income, being often a victim of bullying, having lower family support and school relationships' quality, having poorer psychosocial wellbeing, and using more frequently Social Network sites. Written cybervictimization resulted instead associated with being female, but also with being a victim of traditional bullying, perceiving poorer psychosocial wellbeing, and with frequently using both Social Network sites and online gaming. No relation emerged between visual cybervictimization and gender. Still, this form

resulted associated with the frequency of both roles (perpetrator and victim) in traditional bullying, with family meals attendance, with family support and Social Network sites use.

The findings of the present study suggest that cybervictimization in adolescence - across the three age periods considered (i.e., 11 years, 13 years, and 15 years) - relates to a constellation of factors, which is differently associated with the specific online bullying modalities inquired (i.e., general, written, visual). This data should be taken into account in the development or in the updating of programs against cybervictimization (e.g., Kiva by Kärnä et al., 2011; Palladino, Nocentini & Menesini, 2016) to tailor them to the specific constellation of involved factors. Such programs should seek to empower adolescents and their social context by involving their family and school context in an effective way. Conclusively, the differences that emerged between written and visual cybervictimization are essential knowledge for professionals seeking to develop a deep understanding of cyberbullying, how it changed over the last decades, and how it should be counteracted.

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Chapter III.

Associated Factors of Girls' Cyberbullying Victimization in Adolescence.

Abstract

Background: Adolescent girls are more often cyberbullied than boys. Weight can be more explanatory for females (i.e., given socio-cultural pressures towards ideal thinness) than other factors associated to cyberbullying victimization in both genders. **Study Aims:** The study tests: i. whether a constellation of variables significantly associated with cybervictimization in both genders associates with girls' cyberbullying victimization frequency; ii whether weight-related variables (e.g., weight in kilograms, body-mass index, perceived weight) are positively associated with girls' cyberbullying victimization frequency; iii. whether weight-related variables hold a stronger statistical association with girls' cyberbullying victimization than other factors. **Method**: The sample includes 1535 girls (Mean age=13.7, SD=1.7) who have completed the HBSC 2014 self-report protocol. Frequentist and Bayesian linear regression models have been conducted. **Results**: Traditional bullying victimization, social networks' use, medicine consumption, perceived weight, and type of smartphone significantly associate with girls' cybervictimization. Traditional bullying victimization holds the strongest statistical association; among weight-related variables, only perceived weight holds a substantial association with cyberbullying victimization. **Discussion**: For girls, weight-related variables are less explanatory than other factors predicting cybervictimization in both genders. The girls not perceiving to correspond to the ideal size are more at risk for cyberbullying, regardless of their actual weight and BMI.

Introduction

In the last decades, Internet has become a crucial resource in adolescents' everyday life, for communication, entertainment, information, and to seek popularity (Tsitsika, Janikian, Wójcik, Makaruk, Tzavela, Tzavara et al. 2015). On the other hand, Internet has also facilitated different forms of harassment and cybervictimization (i.e., cyberbullying, cyber-stalking, cyber-grooming, cyber-Intimate Partner Violence) by allowing to get information, control and influence over the victim's life (Hinduja & Patchin, 2011; Fernet, Lapierre, Hebert, & Cousineau, 2019). In this framework, cyberbullying consists of intentional offensive actions by one or several bullies against one target (Hinduja & Patchin, 2007), perpetrated through the Internet and electronic devices.

Information and Communication Technology (ICT) features (i.e., asynchrony in communication, possibility to hide behind nicknames or anonymity, dehumanization of others, language disinhibition) lead research to distinguish between traditional bullying and cyberbullying, which became more than a direct transposition of traditional/school bullying on the Internet (Olweus & Limber, 2018). Due to its multidimensionality (Vyawahare & Chatterjee, 2020), cyberbullying encompasses different behavioural categories (i.e., flaming, denigration, threatening, outing of personal information, impersonation, exclusion, cyberstalking, revenge porn) (Willard 2007; Smith, del Barrio, & Tokunaga 2012; Redmond, Lock, & Smart, 2019). Moreover, cyberbullying prevalence rate is higher than traditional bullying since 36% of adolescents report to have experienced cyberbullying victimization, while 15% traditional bullying victimization (Modecki, Minchin, Harbaugh, Guerra, & Runions, 2014). Overall, cyberbullying is also a worldwide growing phenomenon that needs to be urgently understood and adequately addressed, since its prevalence unstoppably improves alongside ICT's progress (Sampasa-Kanyinga, Lalande & Colman, 2020).

Cyberbullying and gender differences

The study of Sorrentino and colleagues (2019), investigating gender differences in cyberbullying and cybervictimization rates in eight European nations, highlights an overall

prevalence of males in cyberbullying perpetration, confirming previous evidence from Tokunaga (2010), Kowalski and Limber (2007), and Dempsey, Sulkowski, Nichols, and Storch (2009). According to these studies, boys tend to be more aggressive than girls also in face-to-face bullying dynamics, and they reproduce the same pattern in cyber-space. Concurrently, Sorrentino et al. (2019) have not discovered any gender difference in cybervictimization speculating that internet may provide users with a "gender-neutral" setting where gender does not count as a consistent risk factor for cybervictimization. Differently, having at least one Social Network site's account and using it more than four hours a day (Baldry, Farrington, & Sorrentino, 2015; Erdur-Baker, 2010) seem to enhance cyberbullying victimization risk.

To be noted, rates of cyberbullying among teenagers differ among studies published in the last twenty years, in a range from 10% (Smith, Mahdavi, Carvalho, Fisher, Russell, & Tippet, 2008), or 20% (Garett, Lord, & Young, 2016), to up 70% (Selkie, Fales, & Moreno, 2016), reflecting both last decade Internet Communication Technology (ICT) pervasive influence in youths' daily life, and the variety of instruments to measure cyberbullying involvement. Such a broad range of assessment tools indicates the lack of consensus in defining and operationalizing cyberbullying perpetration and victimization (Sorrentino et al., 2019), an issue that could impact on rates estimation and findings' generalizability.

Thusly, the literature reveals mixed results about gender-differences in cyberbullying. Several studies have shown a major involvement for females as cyberbullying victims (Marcum, Higgins, Freiburger, & Ricketts, 2012; Beckman, Hagquist & Hellström, 2013; Heiman & Olenik-Shemesh, 2015; Smith, 2019), whereas males are more involved as cyber-bullies (Schultze-Krumbhlz, Göbel, Scheithauer, Brighi, Guarini, Tsorbatzoudis et al., 2015; Baldry, Farrington, & Sorrentino, 2017). Contrarily, some studies (e.g., Mishna, Cook, Gadalla, Daciuk, & Solomon 2010) have not reported any significant gender difference in cyberbullying involvement. According to Zsila et al. (2019), females are more at risk for cyberbullying perpetration only when they have repeatedly experienced traditional bullying victimization, while boys are more prone to become cyberbullying victims when

they experience intensive anger rumination. However, this research direction requires further confirmation from replication studies. Smith (2019) proposes a further age-related interpretation of gender differences in cyberbullying roles, stating that females may be more involved in cyberbullying as perpetrators in earlier adolescence, becoming victims in later adolescence. Another explanation by Mishna et al. (2010) points out that gender differences in cyberbullying roles link with different patterns of internet use between boys and girls. Girls tend to use the web with communicative intents, also sharing videos, pictures, and personal opinions, while boys are more likely to online video-gaming. In this sense, gender differences substantially impact on the probability to be cyberbullying victims (Holtz & Appel, 2011), because girls disclose more information about their selves on Social Network sites than males (Ortega, Elipe, Mora-Merchán, Calmaestra & Vega, 2009; Ortega, Elipe, Mora-Merchán, Genta, Brighi, Guarini et al., 2012).

Furthermore, as the continuity hypothesis by Ybarra and Mitchell (2004) highlighted, the consistent direct correspondence between the assumed role in traditional bullying and the assumed role in cyberbullying (Li 2007; Smith et al. 2008; Dooley, Pyżalski, & Cross, 2009) may also impact on gender-differences in cyberbullying and cybervictimization. In fact, males are more prone to bully other peers in face-to-face dynamics, with higher frequency and continuity than females (Buelga, Cava, Musitu, & Torralba, 2015). However, the direct correspondence interpretation is limited only to explain the probability to become a cyberbully in light of the previous perpetration of traditional bullying.

Other studies highlighted that males are more often victimized in traditional bullying than females (Huang & Chou, 2010; Wang, Iannotti, & Nansel, 2009) and this evidence is not consistent in cyberspace where females cybervictimization rates are higher (Dehue, Bolman, & Völlink,2008; Kowalski and Limber 2007). Erdur-Baker (2010) has observed that gender differences impact on the association between traditional bullying roles and cyberbullying roles. Specifically, boys are more prone than girls to perpetrate cyberbullying whether they lived previous experiences of victimization in cyberbullying (Wong, Cheung, & Xiao, 2018), while females tend to perpetrate cyberbullying

whether they lived previous experiences of traditional bullying (Yang, Stewart, Kim, Kim, Shin, Dewey, et al. 2013).

Meta-analytic research has shown that cultural context also plays a crucial role in determining cyberbullying involvement differences among boys and girls (Sun, Fan, & Du, 2016), that could mirror males and females' inequalities in society (e.g., different access to political, economic, ideological resources) (Fischer & Oliker, 1983). As a consistent example within cyber-bullying taxonomy, female sexual-objectification deriving from a patriarchal cultural matrix leads to online revenge-porn (Hearn & Hall, 2019), which is mostly practiced by males, involving females (e.g., ex-partners) as victims (Henry & Powell, 2015; O'Connor, Drouin, Davis, & Thompson, 2018).

Despite prevalence rates among genders and their etiological interpretations, the literature points out that cyberbullying has a more severe impact on girls than boys during adolescence, because females describe the experience as more hurtful than males, both as regards traditional bullying victimization (Hughes, Middleton, & Marshall, 2009) and cyberbullying victimization (Campbell, Slee, Spears, Butler & Kift, 2013). Giving that cyberbullying victimization is associated anxiety, social anxiety, psychosomatic, internalizing, depressive symptoms, sometimes even more severe than the ones deriving from traditional bullying (Juvonen & Gross, 2008; Wang, Iannotti & Luk, 2011; Vieno, Gini, Lenzi, Pozzoli, Canale & Santinello, 2014; Holfeld & Sukhawathanakul, 2017) and lower psychosocial health (Larrañaga, Yubero, Ovejero & Navarro, 2016), experiencing cybervictimization leads girls to develop more serious and long-term depressive symptoms than boys (Turner, Exum, Brame & Holt, 2013; Selkie et al., 2016; Fisher, Gardella, & Teurbe-Tolon, 2016). Qualitative assessment research also corroborated this evidence: the girls who are victims of cyberbullying refer through narration a more stressful impact of cyberbullying on their everyday life than the boys (Espinoza, 2015). For example, as consequences of specific forms of cyberbullying involving revenge porn, 21% of female internet users declared to have sought mental health professionals' heap, 5% to have developed school or academic problems, 4% to have maturated

difficulties in their professional career, 5% to have decided to move away after this experience of cybervictimization (Hinduja, 2017).

The illustrated theoretical and empirical framework highlights the importance of tracing a line between males and females cybervictimization experiences in terms of prevalence, risk factors (e.g., Internet use habits), and cultural influences. Thus, addressing girls' cybervictimization associated factors is crucial to clarify which profiles, among females, are at higher risk for cyberbullying, and which variables may be crucial in preventative strategies against this issue. However, before pursuing such purpose, a more in-depth illustration of cyberbullying associated variables (both for boys and girls) is necessary. Then, a premise on the risk factors for girls that imply issues in body-image perception (i.e., perceived weight[2], actual weight, body-mass-index) will be displayed.

Factors increasing cybervictimization's risk in both genders

Research indicates a set of variables that tend to be associated to cybervictimization frequency for both genders (i.e., sociodemographic variables, type of connection and available electronic devices, internet use patterns, involvement into traditional bullying, health-related variables). Firstly, analyzing sociodemographic variables, adolescents from families with a high socioeconomic status result more at risk for being involved in cyberbullying dynamics (Bevilacqua, Shackleton, Hale, Allen, Bond, Christie, et al., 2017; Beyazit, Simsek & Ayhan, 2017). Precisely, family well-off may guarantee adolescents with major possibility to access the internet by using the latest and fastest electronic devices, leading to a major risk for cybervictimization. However, several studies point in the opposite direction stating that the adolescents who are more involved in cyberbullying present low familial socioeconomic status (Shaheen, Hammad, Haourani & Nassar, 2018; Chen, Lo, Zhu, Cheung, Chan & Ip, 2018), leaving the debate open especially as it regards cybervictimization.

Another sociodemographic factor is age. According with Lenhart, Madden, Purcell, Zickuhr, and Rainie (2011), the proportion of teenagers witnessing cyberbullying episode or experiencing them

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[2] 'perceived weight' indicates the perceived adequacy of one's own weight.

in first person is 85%. The interpretation is interlaced with technological progress because, as stated by Prensky (2001; 2009), adolescents are digital-natives and naturally more involved than previous generations in the web and its processes.

Concerning the type of electronic devices used by adolescents to navigate the internet, Kowalski, Limber, and McCord (2018) considered that the initiation of children and teenagers to the use of ICT (Information & Communication Technology) are crucial in determining individual internet use patterns later in life. According to Ofcom data (2016), 32% of English children aging between 8 and 11 years already use a smartphone, while in the USA primary school children using a smartphone are 53%. This percentage raises with adolescence, as 69% of 13-year-olds and 90% of 17-year-olds use the smartphone (Lenhart, 2015). Early approaches to smartphones have raised the criticism of scholars in oculist, pediatric, and psychological fields (Cubelli e Vicari, 2016). These rates lead to questioning the impact of age on cyberbullying, hypothesizing that cyberbullying tends to grow alongside smartphone use and aging.

Research also focuses on adolescents' internet use in association with cyberbullying victimization. Premising that cybervictimization emerges from the combination of a target, a willful offender, and the absence of monitoring guardians (Navarro & Jasinksi, 2012), the risk to suffer from cyberbullying increases alongside with the time the adolescents spend online without supervision by adults (Gámez-Guadix, Orue, Smith & Calvete, 2013; Jung, Leventhal, Kim, Park, Lee, Lee et al., 2014). However, time spent online is only partially explicative and needs to be read in light of specific internet activities. In particular, the frequent and active use of Social Networks causes a major exposition to cyberbullying threats, especially for young girls who tend to disclose more than boys on such platforms (Ortega et al., 2009; Coyne, Padilla-Walker, Holmgren, Davis, Collier, Memmott-Elison et al., 2018; Barlett, DeWitt, Maronna & Johnson, 2018).

Last decade literature has also examined the role correspondence between traditional bullying and cyberbullying. The direct continuity hypothesized by Ybarra and Mitchell (2004) was confirmed by Juvonen & Gross (2008), and Slonje & Smith (2008), demonstrating that victims of traditional

bullying may result in being victims also in cyberbullying. On the other hand, other approaches have raised interest in the possibility of a role reversal (King, Walpole & Lamon, 2007; König, Gollwitzer & Steffgen, 2010) according to which victims in real-life bully may become cyberbullies in cyberspace. This latter hypothesis is not supported by empirical findings, but still, it is premature to judge which explanation better fits to describe this phenomenon. Moreover, given cyberbullying health consequences in terms of psychosomatic and internalizing symptoms (Vieno et al., 2014; Holfeld & Sukhawathanakul, 2017), and the reported decrease of psychosocial wellbeing (Larrañaga et al., 2016), health-related variables have been investigated in relation to cyberbullying cybervictimization (Görzig & Frumkin, 2013). In line with this, the meta-analysis by Fisher et al. (2016) highlights that adolescents who are victims of cyberbullying are more prone to consume medicines. Still, it is not clear whether adolescents' who suffer more from cyberbullying were already inclined to consume medicines for health complaints. As cybervictimization is a growing emergency for adolescents and youths (Sampasa-Kanyinga et al., 2020), investigating its relationship with health is a priority, with a particular focus on girls whose health resulted more vulnerable after cybervictimization (Baldry, Sorrentino & Farrington, 2019).

Weight-related factors associated with cybervictimization

Adolescence is characterized by body changes that lead the individual to a mutable perception of self-image (Steinberg, 1999). In the Sixties, Erikson indicated that one of the main challenges of adolescence is building a personal sense of identity, integrating cognitive, emotional, social, and image-related transformations to migrate towards adulthood (Erikson, 1968). As augmented by Rieves and Cash (1996), bodyweight is interlaced with body self-esteem, and thus it is noteworthy to explain traditional bullying and cyberbullying victimization. Being mocked for bodyweight is common for many children and adolescents: 53% of parents identify overweight as the main reason why their son/daughter is a victim of bullying (Puhl & Luedicke, 2012; Puhl, Peterson & Luedicke, 2013). Many studies point out that overweight enhances the probability to be a victim of bullying

during adolescence, with victimization risk rising in relation with higher body-mass-index (Puhl & Luedicke, 2012; Wilson, Viswanathan, Rousson & Bovet, 2013), also emphasized by body dissatisfaction (Fox & Farrow, 2009). According to Puhl et al. (2013), 61% of adolescence has experienced once in their life unpleasant comments about their physical appearance by peers, and 59% report having received online content finalized to mock them for their image. Image-related bullying and cyberbullying lead the victim to a cognitive distortion about his/her body-image (Calvete, Orue, & Gámez-Guadix, 2016), which can also be independent of actual weight and BMI.

Given this premise, cybervictimization is particularly harmful to girls during adolescents (Frisén, Berne & Lunde, 2014; Mishna et al., 2010; Ramos-Salazar, 2017), with a negative impact over victims' mental health (Marengo, Jungert, Iotti, Settanni, Thornberg, & Longobardi, 2018). As demonstrated by Frisén and colleagues (2014), cybervictimization leads to a decrease in girls' body self-esteem. Girls experiencing online bullying, have a minor consideration of their body appearance than girls who do not suffer from this type of cybervictimization, especially when a male cyber-bully harasses them (Frisén et al., 2014). It is noticeable that adolescence itself leads many girls to body dissatisfaction, since in western countries mass media and advertising pressure females towards thinness (Grogan, 1999; Dittmar & Howard, 2004). In other words, cultural influences shaped into body-shaming and fat-phobia cyberbullying against girls, aiming at inducing a feeling of shame and hypervigilance in the victim on whether her body-type conforms or not to mass culture ideals (Mishna, Schwan, Birze, Van Wert, Lacombe-Duncan, McInroy, et al., 2018). Additionally, teenage girls tend to use the internet to gain reinforcement about their body image, also adopting risky online behaviours like chatting and sharing personal pictures with strangers (Longobardi, Fabris, Prino & Settanni, 2020). Up to now, literature has focused on gender differences in cyberbullying roles. However, literature has not depicted yet the constellation of characteristics of female cybervictims' that might serve for tailoring preventative and intervention strategies.

Aims and Hypothesis

In the light of a prevalence of cybervictimization among girls, peculiar behavioural risk factors for girls, and cultural-related variables, the present study focuses on the predictors of cybervictimization for only female adolescents. The research is also addressed at deepening the association between weight-related variables (i.e., actual weight, perceived weight, body mass index) and cyberbullying victimization among girls, investigating whether these type of factors have a stronger relation with cybervictimization than other types of variables that are commonly associated with cybervictimization in both genders (i.e., sociodemographic variables, internet use, electronic devices and an internet connection, bullying involvement, health-related variables). Precisely, the hypotheses of the present study are the following:

1. Age, socioeconomic status, actual weight, perceived weight, body mass index (BMI), type of smartphone, social networks' use frequency, frequency of traditional bullying victimization, frequency of traditional bullying perpetration, frequency of medicine assumption, constitute a set of variables which is statistically associated with cybervictimization.

2. Weight-related factors (i.e., actual weight, perceived weight, body mass index) are significantly and positively associated with cybervictimization.

3. Weight-related factors are associated with girls' cybervictimization with a stronger relation than the other factors that are commonly associated with this experience in both genders.

Method

Sample

The present study used a sub-sample of the Health Behaviour in School-Aged Children (HBSC) sample recruited in 2014 within the northern Italian region of Lombardy. Namely, 1535 female adolescents (Mean Age=13.74, SD=1.70, Minimum=11.42, Maximum= 16.58) were included in the study (driven from the original sample, n=3172). The majority of participants declared to be Italian

(93.7%), and to have a medium-level family income (71.3%) assessed with the Family Affluence Scale (FAS; Currie, Elton, Todd & Platt, 1997; Currie, Molcho, Boyce, Holstein, Torsheim, & Richter, 2008).

Procedure

In Italy, HBSC data collection (2014) was implemented thanks to the collaboration between universities (under the lead of the Italian P.I. Professor Franco Cavallo, University of Turin), national institutions, and local institutions (for further information see: General Premise). In Lombardy, random clustering was performed to select schools from an alphabetically ordered list of public and private institutions. In each selected school, classes were randomly chosen to obtain representative numbers for the three considered age-ranges (11, 13, 15-yeard-old). The administration was performed by health services operators in the classrooms, during May 2014, and took 60 minutes for the whole self-report completion. Ethical approval for the project was sought from HBSC networks, as well as within participating schools. After approval from school boards, informed consent documentation from families was collected.

Measures

Cybervictimization was assessed with two items, respectively measuring the last two months' frequency of cyberbullying victimization via computer, SMS, chat, and other sites, and cyberbullying victimization via photographs non-consensually shared online. Answers were ordered on a 5-points Likert scale from 1=never to 5= more times a week. Given the significant correlation between the two items (Pearson's r=.18, p<.001), the items were aggregated in a comprehensive index computing their statistical mean. Before answering, the participant read a short definition of bullying and cyberbullying.

Family Affluence Scale (FAS, Currie et al., 1997; Currie et al., 2008) was used to investigate adolescents' perceptions of family socioeconomic status. Four items measured family activities and

possession to estimate their status (i.e., How many bathrooms are there in your house? 1=none, 2=one, 3=two, 4= more than two). The scale presented sufficient internal consistency with Cronbach's α =.60.

Actual weight was measured by asking participants to self-report their weight in kilograms.

Perceived weight was assessed asking participants about how they perceived their body in terms of size, on a Likert scale where 1= definitely too thin, 2= a little thin, 3= almost the right size, 4= a little fat, 5= definitely too fat.

Body-mass-index was computed as the ratio between weight and individual height squared.

Victimization in traditional bullying was assessed as the last two months' frequency of episodes in which the participant was a victim of face-to-face bullying. Answers were ordered from 1=never to 5= more times a week. Before answering, the participant read a short definition of bullying.

Perpetration of traditional bullying was assessed as the last two months' frequency of episodes in which the participant was a perpetrator of face-to-face bullying. Answers were ordered from 1=never, to 5= more times a week. Before answering, the participant read a short definition of bullying.

Type of smartphone was investigated by asking participants whether they had a phone, and which internet connection features it had. Answers were rated from 1=no phone possessed, 2=yes, featured without an internet connection, 3= yes, featured with a limited internet connection, 4= yes, featured with an unlimited internet connection.

Online activities were assessed in terms of specific online activities frequency (e.g., use of Social Network sites and forum). Participants were asked to rate how often did they practice such online activities, with the possibility to answer on a Likert scale from 1=always to 4= never. Scoring was reversed to facilitate analyses.

Medicine consumption's frequency in the last month was assessed with six items, corresponding to six different types of symptoms (headache, stomachache, sleep problems,

nervousness, cold, other symptoms). Participants could rate their responses from 1= no medicine at all, 2= yes, taken once, 3=yes, more than once. A comprehensive index was derived from items mean computation (internal consistency was Cronbach's α=.60).

Analytic Plan

Data analysis was performed using the 20th version of IBM Statistical Package for Social Science (SPSS) software to run the analysis. Preliminarily, correlational analyses were implemented to explore the associations between variables. Subsequently, the same linear regression model was performed by following both a frequentist and a Bayesian statistical approach. In accordance with Neyman and Perason's hypothesis testing approach (Christensen, 2005), a frequentist linear regression model was run on SPSS to test the associated factors with cybervictimization using p-value (with statistical significance level at $p< 0.05$) to determine whether to accept or reject the null hypothesis (H_0= there is no association between the independent and the dependent variable). To further estimate which factors were associated with cybervictimization, a Bayesian linear regression model was also implemented using JASP 0.11.1 (2019). JASP is an open-source software running both frequentist and Bayesian statistics. The output of Bayesian statistical analysis is the Bayes Factor (BF) that illustrates the probability for one model to raise respect to another one (Wagenmakers Verhagen, Matzke, Steingroever, Rouder, & Morey, 2017). Two models were compared: the model predicting the null hypothesis (H_0), and the model predicting the alternative hypothesis (H_1). BF expresses the ratio between the likelihood of data given the null hypothesis (H_0) and the likelihood of data given the alternative hypothesis (H_1). Since frequentist statistics only express with p-value the likelihood of data given the null hypothesis, not including the likelihood of the alternative one, the frequentist approach only permits to reject or not the null hypothesis. Differently, Bayesian statistics permits to quantify the evidence of both H_0 and H_1. For the present analysis the prior distribution corresponded to JASP default settings as a non-informative prior (r scale fixed effect = 0.5, r scale random effects = 1, r scale covariates = 0.354) (Wagenmakers et al., 2017). In linear regressions variables were inputted in five blocks: block 1, encompassing age and family income; block 2,

encompassing perceived weight, actual weight and BMI; block 3, including smartphone type, social

network use frequency; block 4, including bullying victimization and perpetration; block 5, including

the frequency of medicine consumption.

Results

Pearson product-moment correlations between study variables were computed (Table 1).

Table 1.

Pearson's product-moment correlations between study variables (n = 1535).

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.
1. Cybervictimization	1.00										
2. Age	0.03	1.00									
3. FAS	$.052^{*}$	0.05	1.00								
4. Perceived-Weight	$.09^{***}$	$.19^{***}$	0.03	1.00							
5. Actual Weight	0.02	$.51^{***}$	0.01	$.46^{***}$	1.00						
6. BMI	0.02	$.31^{***}$	-0.05	$.49^{***}$	$.82^{***}$	1.00					
7. Smartphone Type	$.07^{**}$	-0.01	$.07^{**}$	-0.03	-0.01	0.00	1.00				
8. SNs' use frequency	$.11^{***}$	$.39^{***}$	$.06^{**}$	$.12^{***}$	$.21^{***}$	$.13^{***}$	$.13^{***}$	1.00			
9. Bullying Victimization	$.24^{***}$	$-.07^{**}$	-0.04	$.07^{**}$	0.02	$.06^{*}$	0.01	-0.01	1.00		
10. Bullying Perpetration	0.04	0.02	0.02	$.07^{**}$	$.06^{*}$	$.06^{*}$	0.01	$.08^{**}$	$.19^{***}$	1.00	
11. Medicine Use Frequency	$.12^{***}$	$.23^{***}$	0.03	$.11^{***}$	$.17^{***}$	$.13^{***}$	0.04	$.17^{***}$	$.08^{**}$	$.11^{***}$	1.00

Note: $^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$. FAS: Family Affluence Scale.

Overall, the model resulted statistically significant $F(1,1534)=16.17$, $p<.001$, explaining 10% of variance (Nagelkerke $R^2=.10$). As regards the independent variables (see Table 2), Perceived-Weight $\beta = .09$, $p < .01$, Smartphone Type $\beta = .06$, $p < .05$, Social Network Use $\beta = .09$, $p < .01$, Bullying Victimization $\beta = .25$, $p < .001$, Medicine consumption's frequency 09, $p < .01$ resulted positively associated with cybervictimization frequency. Standardized coefficient highlight that Bullying Victimization has the strongest association with cybervictimization, followed by Perceived-Weight, Social Network sites' use frequency, Medicine use frequency, and, lastly, Smartphone Type.

Table 2.

Linear Regression Model with cybervictimization as outcome and Age, Family Affluence Scale (FAS), Perceived Weight, Actual Weight, Body Mass Index (BMI), Smartphone Type, Social Network sistes (SNs) use frequency, Bullying Victimization, Bullying perpetration, Frequency of Medicine consumption as independent variables.

	B (SE)	β	t	95% CI Lower	95% CI Upper
Constant	.65 (.10)		6.30	.45	.85
Age	.00 (.01)	.00	-.13	-.01	.01
FAS	.01 (.00)	.04	1.82	.00	.02
Perceived-weight	.04 (.01)	.09**	3.18	.01	.06
Actual Weight	.00 (.00)	-.03	-.53	.00	.00
BMI	.00 (.01)	-.04	-.87	-.02	.01
Smartphone Type	.04 (.02)	.06*	2.49	.01	.07
SNs' use frequency	.03 (.01)	.09**	3.44	.01	.05
Bullying victimization	.11 (.01)	.25***	9.81	.08	.13
Bullying perpetration	-.02 (.01)	-.03	-1.32	-.05	.01
Medicine Consumption frequency	.08 (.02)	.09**	3.45	.03	.13

*Note: *p<.05, **p<.01, ***p<.001. FAS = Family Affluence Scale; BMI= Body Mass Index; SNs= Social Networks. B=unstandardized regression coefficient; β= standardized regression coefficient; SE= standard error. Frequency of Cybervictimization: 1=never, 5=several time per week (in the last two months). . FAS: 1=low, 4=high. Actual weight is measured in kilos. Perceived wight: 1= definitely too thin, 5= definitely too fat. BMI= weight/height^2. Smartphone type:*

1=no phone possessed, 4=phone with unlimited connection. Frequency of Victimization and Bullying perpetration: 1=never, 4=several times per week. Frequency of medicine consumption: 1=no medicine taken, 3=medicine taken more than once in the last month.

Further analysis permitted to observe the variables' Bayes Factors (Table 3). According to Jeffreys' (1961) thresholds, BF values> 100 are decisive evidence for H$_1$, values between 10 and 30 present very substantial evidence, values between 3 and 10 present substantial evidence. Bullying victimization resulted in having the strongest association with cybervictimization (BF=1102e +19), followed by SNs' use frequency (BF=114.41), Medicine consumption frequency (BF=53.23), Perceived Weight (BF=10.22) and, lastly, smartphone type (BF=5.84).

Table 3.

Bayesian Linear Regression Model with cybervictimization as outcome and Age, Family Affluence Scale (FAS), Perceived Weight, Actual Weight, Body Mass Index (BMI), Smartphone Type, Social Network sistes (SNs) use frequency, Bullying Victimization, Bullying perpetration, Frequency of Medicine consumption as independent variables.

Variables	P(incl)	P(incl|data)	BF inclusion	95% CI Lower	95% CI Upper
Intercept	1000	1000	1000	1.09	1.12
Age	0.50	0.31	0.46	-0.01	0.01
FAS	0.50	0.63	1.75	0.00	0.02
Perceived-weight	0.50	0.91	10.22	0.00	0.05
Actual Weight	0.50	0.47	0.90	-0.01	6969e -4
BMI	0.50	0.54	1.20	-0.01	7951e -4
Smartphone Type	0.50	0.85	5.84	0.00	0.06
SNs' use frequency	0.50	0.99	114.41	0.01	0.05
Bullying victimization	0.50	1000	1102e +19	0.08	0.12
Bullying perpetration	0.50	0.45	0.84	-0.04	0.01
Medicine Consumption frequency	0.50	0.98	53.23	0.03	0.12

Note: *P(incl)*=Prior Inclusion Probability, settled at 0.50 (JASP default setting); *P(incl|data)*=Posterior Inclusion Probability; *BF$_{inclusion}$*=inclusion Bayes Factor; *CI*=Credible Interval settled at 95% indicate the probability that the true estimation lies within the interval between Lower and Upper CI, given evidence from the observed data (see Hespanhol, Vallio, Costa, & Saragiotto, 2019).

Discussion

Findings from the frequentist regression model illustrate that traditional bullying victimization, frequency of use of social networks, medicine consumption frequency, perceived weight, and type of smartphone are all holding significant and positive association with the frequency girls experience cybervictimization. Findings from Bayesian analysis support that traditional bullying victimization frequency is the factor holding the strongest association with cybervictimization frequency. Subsequently, Social Network use frequency constitutes the second most influential associated factor, followed by medicine consumption frequency. Perceived weight emerges having a substantial association with cybervictimization, while the smartphone type holds the weakest relation with the outcome. Both the frequentist model and the bayesian model report that no relationship with cybervictimization emerged for age, family socioeconomic status, actual weight, body mass index, and perpetrated bullying.

In this female sample, traditional bullying victimization resulted in holding the strongest association with cybervictimization, in line with the continuity perspective of Ybarra and Mitchell (2004) tested in samples that included both genders. According to Ybarra and Mitchell (2004), real bullying dynamics' roles completely correspond to online-interactions roles. Thus, the present study is supporting previous literature stating that victims of bullying are more prone to be also victims of cyberbullying. However, this result should be read in the light of prevalence findings showing that girls are more involved than boys as victims in traditional bullying (Heiman & Olenik-Shemesh, 2015; Smith, 2019), which motivated an investigation of the factors predicting cybervictimization only for girls. By the same token, the present findings do not confirm the hypothesis of a role reversal (King et al. 2007; König et al. 2010) on girls since the frequency of bullying perpetration does not result significantly associated with cybervictimization. As literature underlined that girls are more frequently involved in bullying as victims than boys (Marcum et al., 2012; Beckman et al., 2013), a role reversal effect was likely to occur in cyberspace. Given the open debate around the hypotheses

of direct correspondence and reversal between bullying and cyberbullying roles, separately testing the two hypotheses in males and females may represent an innovative contribution for future research.

The present study supports previous evidence about a positive association between time spent online and cybervictimization frequency (Navarro & Jasinksi, 2012). In particular, it points out that there is a strong association between social networks' use frequency and cybervictimization in adolescent girls. Communicative and interactive use of social networks, favored by female young internet users, consists of disclosing personal life-events, photographs, opinions, and other contents that may become the object of mocking and denigration (Coyne et al., 2018; Barlett et al., 2018). A deeper understanding of the factors associated with girls' cybervictimization may implicate: i. investigating the frequency with whom girls use different social networks (i.e., Twitter, Instagram, Tick-Tock, Facebook, etc.), ii. the contents that are more exposed to cyberbullying acts (i.e., personal opinions about news from the world, personal opinions about politics, personal photographs about holidays, personal photographs about clothes and styles, personal videos of movies or book-reviews). This latter point may also benefit from the integration with data from machine learning algorithms aimed at online bullying and harassment detection (Nocentini, Zambuto & Menesini, 2015).

Health, in terms of medicine use, also results associated with girls' cybervictimization experience. The frequency with whom girls assumed medicine in the month before the survey administration has been investigated and found positively associated with the frequency of cybervictimization experiences in the two months previous the survey completion. The temporal range of the HBSC measures allows speculating a partial chronological order between the two variables, as cybervictimization episodes are likely to have occurred before medicine assumption. However, the lack of longitudinal data does not allow a precise causal inference about the relationship between cyberbullying and medicine use, which could also be due to pre-existent health complaints that may have led cyber-victims to be targeted and harassed. While this point may find further clarification in future longitudinal research, the present findings are in line with literature about the relation between girls' health vulnerability and cyberbullying victimization (i.e., frequency of

psychological and physiological symptoms, low perceived health, low perceived psychosocial wellbeing, etc.) (Fisher et al., 2016; Vieno et al., 2014; Holfeld e Sukhawathanakul, 2017; Larrañaga et al., 2016).

Among the tested weight-related variables (actual weight, perceived weight, BMI), only perceived weight holds a significant and positive association with girls' cybervictimization frequency. Moreover, this factor resulted in having a weaker association than traditional bullying victimization, Social network's use frequency, and medicine assumption frequency. The indexes of real weight (e.g., the actual weight and BMI) are not supported by the present research to be directly associated with cybervictimization, thus not replicating Phul and Luedicke (2012) and Puhul et al. (2013) findings. The authors found over-weight capable of enhancing bullying and cyberbullying risk. In this study, such evidence should not be disproved but reinterpreted in the light of the positive association between perceived weight and cybervictimization. Since girls are pressured by cultural stereotypes towards thinness (Grogan, 1999; Dittmar & Howard, 2004), perceiving themselves above the ideal size is positively associated to the frequency of cybervictimization. In other words, girls do not necessarily need to be overweight for being victims of cyberbullying, but they are more exposed when they have a cognitive distortion about their body-image (Frisén et al., 2014; Calvete, et al., 2016).

Smartphone type results holding the weakest association, within the tested model, with girls' cybervictimization. This factor results positively associated with cybervictimization, differently from family socioeconomic status, which did not result a significant variable in determining the outcome, differently from what expected on the basis of previous studies (Bevilaqua et al., 2017; Beyazit et al., 2017). In other words, the present study does not confirm that girls from families with higher economic income and social status are more prone to suffer from cybervictimization. However, it is possible to speculate that having the last generation device with unlimited internet access reflects a wealthy family background. Further research is needed to clarify this issue. Moreover, the possibility to immersively access the internet with no limitations given by smartphone typology should be

investigated by future studies in interaction with the use of different social network sites, both qualitatively and quantitatively, to clarify girls' cybervictimization risk.

Finally, girls' cybervictimization results associated with a set of variables including: the roles in face-to-face bullying dynamics, the massive use of social network sites, the frequency of medicine assumed for psychological and physical symptoms, the perceived weight, and the smartphone typology that the adolescent owns. All these factors trace a partial profile for female teenagers cybervictimization risk, which should be integrated by future longitudinal analysis to detect causal relations among variables, but also by qualitative methodologies (i.e., interviews, personal diaries, projective tests) which could allow a more in-depth analysis of the phenomenon.

Limitations

The present study has several limitations. The HBSC protocol consists of a self-report questionnaire that is exposed to the risk of social biases (social desirability, acquiescence, attraction of scale's extreme points) (Dicken, 1963). Moreover, in-classroom administration may have impacted on the protocol completion since participants potentially involved in bullying dynamics may have been influenced by the presence of peers, being primarily concerned for the privacy for the topic of weight, bullying and cyberbullying. Additionally, the HBSC questionnaires do not provide longitudinal data on the variables of interests. The low variance of linear regression, in the frequentist model, may be due to the intervening influence of other variables, not included in the model, in explaining variance. Nevertheless, as pointed out by literature on statistical methods for cyberbullying detection (Rosa, Pereira, Ribeiro, Ferreira, Carvalho, Oliveira et al., 2019), the low-variance of the model may be interpreted in the light of the majority of non-cyberbullying victims in the sample. Another methodological issue that could have influenced the result is the aggregation of cybervictimization items on the basis of a negligible correlation (Pearson's $r=.18$, $p<.001$). However, the Cronbach's α of the aggregated scale was .79, indicating adequate internal consistency reliability.

To solve these methodological issues, future research may repeat the study, also integrating qualitative measures (e.g., interview, self-completed diaries). As regards the lack of a longitudinal design, HBSC has been designed to develop longitudinal research simulations: cross-sectional data of HBSC, collected in 2014, may be used to develop *trend-analysis* on the variables' association investigated in the present study, to detect differences and commonalities with data from the HBSC 2018 surveillance. The study should also be replicated with balanced sub-samples for cybervictimized and non-cybervictimized adolescents to enhance the explained variance. Plus, including more predictors in the linear regression may prevent the model from underfitting. However, the key aim of the present study was to test and compare the associations with cybervictimization of each factor, paying particular attention to weight-related variables.

Conclusion

The current study investigated which variables are associated with girls cyberbullying experiences, by implementing both a frequentist regression analysis and a bayesian regression analysis. The present findings recommend to psychologists, teachers, school directors, and parents, to simultaneously consider that multiple factors (behavioral, health-related, weight-related) can be associated with girls' cybervictimization. Although weight-related variables resulted less explanatory than other factors commonly associated to cybervictimization in both boys and girls (e.g. medicine assumption's frequency, real-life bullying experiences, Social Network sites use, type of phone), in girls perceived weight resulted associated with cybervictimization more than actual weight and body-mass-index. The girls perceiving themselves far from an ideal of thin beauty experience cybervictimization more frequently. Indeed, new generations of millennials may see the possibility to receive reinforcement about their physical appearance (which undergoes essential changes during adolescence) in the active use of social networks (e.g., sharing pictures). This aspect is likely to trigger cognitive distortions about the perceived body-image finalized to homologate to a canon of aesthetic perfectionism proposed in the internet environment, which occurs regardless of the actual weight or

BMI. These results may represent a helpful contribution to structuring tailored programs to counteract cyberbullying, or to enriching already existing evidence-based interventions (e.g., Kiva by Kärnä et al. 2011; No!Trap by Palladino, Nocentini, & Menesini, 2016), by suggesting a major awareness around the link between girls' self-perception and cyberbullying risk.

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General Conclusion

This dissertation contributed to depicting some of the challenges that adolescents have to face to pursuit health and psychosocial wellbeing in the contemporary society. As stressed out in the general introduction, adolescents represent the future of our civilization (Kuntsche & Ravens-Sieberer, 2015). Still, at the same time, their age is entwined with identity frailty (Erikson, 1968; Marcia, 1966, 1993), with the stress derived from physical changes (Hall, 1904), and with the need to balance their socio-emotional resources between family and peers (Armsden & Greenberg, 1987; Nickerson & Nagle, 2005). Plus, adolescence is related to society characteristics (Mead, 1952) (e.g., availability of alcohol, pervasive presence of the internet environment). Moreover, adolescents result more at risk for engaging harmful behaviours (Kulbok & Cox, 2002), like alcohol consumption and being involved into cyberbullying dynamics.

In the first chapter, - non-coercive - parental control and family dinners frequency were questioned in counteracting boys' and girls' alcohol consumption. This is one of the first studies investigating the joint effect of parental control and family dinner frequency on adolescents' alcohol consumption through moderated mediation analyses. While parental control resulted in reducing alcohol consumption in both genders, family dinners' frequency of attendance did not impact on the adolescents' habits as expected. Within the open debate around the effectiveness of family dinners in buffering adolescents' risk behaviours, the study is in line with research considering this factor unfavorably for methodological and theoretical reasons (Goldfarb, Locher, Preskitt, Becker, Davies & Sen, 2017). However, this inconclusive finding should not mislead into demoting family to a marginal role during adolescence. Indeed, adolescents need to balance between the need to affiliate with peers and to maintain a secure relationship with their family (Nickerson & Nagle, 2005). In other words, the study implies that the quality of time spent together may be more important than its frequency. Hospitalized, divorced, and full-time working parents, who appropriately monitor their children throughout a reciprocal dialogue, may constitute the key to successful interventions to reduce

adolescents' alcohol use. Thusly, preventative strategies against adolescents' alcohol use should engage parents and aim at empowering the parent-teenager relationship regardless of the amount of time they spent together. For example, the evidence-based Connect Program (Moretti & Obsuth, 2009), based on Bowlby's Attachment Theory (1969), is addressed at ameliorating the socio-emotional quality of the relationship between parents and adolescents, with effective results in counteracting alcohol consumption (Giannotta, Ortega, & Stattin, 2013).

The second chapter's research questioned the commonalities and differences in visual and written cybervictimization predictors, addressing the contemporary need to innovate and reconceptualize cyberbullying taxonomies (Olweus & Limber, 2018). Previously, Menesini et al. (2011) have reported that the adolescents tend to rate visual cybervictimization as more harmful than written. This study contributes to deepening the different patterns of associated factors with the two distinct forms of cyberbullying victimization. The emerged findings may encourage scholars to study these forms as two distinguished phenomena by differently approaching the online environments conveying written (e.g. Twitter, Whatsapp, etc.) or visual materials (e.g.Instagram, Tik-Tok, etc.). Moreover, this study points out the importance of structuring distinct preventative strategies for visual and written aversive experience online, and to consider this contribution in already existing evidence-based program like Kiva (Kärnä et al., 2011) and No!Trap (Palladino et al., 2016).

Finally, in the third chapter, the focus was exclusively on girls' cyberbullying victimization. Given that a large body of literature shows that girls are more often victim of cyberbullying than boys (Marcum, Higgins, Freiburger, & Ricketts, 2012; Beckman, Hagquist & Hellström, 2013; Heiman & Olenik-Shemesh, 2015; Smith, 2019), this study is one of the few research conducted exclusively on a sample of girls, to detect a profile of risk for female adolescents. Interestingly, the factors associated with females' cyberbullying victimization were the factors commonly depicted as able to enhance the risk of cyberbullying for both boys and girls. Contrarily from what expected and although social-media, television, fashion, and popular culture, press girls to pursue thinness (Grogan, 1999), the real weight did result substantially linked with girls' cybervictimization in this study. The perceived

weight did emerge significant in the association with cybervictimization. This result underlines the possibility of a cognitive distortion in girls that are victims of cyberbullying. Moreover, the present findings encourage research and preventative strategies with a peculiar focus on the association between body-perception and cybervictimization.

The three studies were conducted thanks to HBSC data-collection of 2014. The following recommendations for future research emerged: i. to replicate these research designs with 2018 HBSC data, ii. to develop future trend-analysis on the examined phenomena, iii. to integrate the findings with qualitative and longitudinal methods. Moreover, given the geographical extraction of the sample (Lombardy), it is advisable to replicate the implemented analyses on other countries' data-collections to verify the cross-cultural generalizability of the results.

Conclusively, findings from all the three studies emphasize the crucial role of surveillance studies in monitoring the emerging patterns of risk for the new generations. HBSC surveillance is particularly crucial for prevention because it consents to study adolescents in three key-moments (i.e., age 11, corresponding with puberty and the beginning of middle school; age 13 corresponding – in Italy – to the choice of the high school career; age 15, corresponding with high school years). Through this international data collection, countries are enabled to develop targeted interventions, addressing contemporary challenges to protect future generations. Quoting Benjamin Franklin: "An ounce of prevention is worth a pound of cure."

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Appendix 1: Junior high schools on the territory.

Scuole Secondarie di Primo Grado, equivalent of junior high school.

District	School	Municipality
Bergamo	Comunità Scuola Paolo VI	Alzano Lombardo
	Scuola Secondaria Arcene	Arcene
	S.M.S. Corridoni	Bergamo
	IC Casirate D'adda	Casirate D'adda
	S.M.S. Cenate Sotto	Cenate Sotto
	S.M.S. Abate G. Bravi	Cologno Al Serio
	S.M.S. Levate	Levate
	S.M.S. Cesare Zonca	Treviolo
	S.M.S. Torquato Tasso	Zanica
Brescia	Scuola Sec. I Grado Carducci	Brescia
	Verga	Calvagese Della Riviera
	Moretti	Casto
	S.M.S. Morcelli Chiari	Chiari
	Lana-Gnutti Ic Polo Est	Lumezzane
	Scuola Sec. I Grado Orzinuovi	Orzinuovi
	Glisenti	Vestone
Como	S.M.S. Bossi	Mozzate
	Scuola Sec. I Grado Ossuccio	Ossuccio- Tremezzina
	S.M.S. Della Porta	Porlezza
	Grassi	Uggiate-Trevano
	Scuola Media S. Maria Assunta	Villaguardia / Loc. Maccio
Cremona	Scuola Sec. I Grado Offanengo	Offanengo
	Robecco D'oglio	Robecco D'oglio
Lecco	S.M.S. Bellano	Bellano
	D'oggiono	Oggiono
Lodi	Sms F. Cazzulani	Lodi
	Scuola Sec. I Grado S.Francesca Cabrini	Sant'Angelo Lodigiano
Mantova	Scuola Sec. I Grado R. Gandolfo	Castellucchio
	S.M.S. G.Bazzani	Virgilio
Milano	Manzoni	Arconate
	Da Vinci	Arese
	Montale	Bollate
	Marconi	Cologno Monzese
	Kennedy	Inzago
	De La Riva	Legnano
	Locatelli	Locate Di Triulzi
	IC De Amicis - Leonardo Da Vinci	Marcallo Con Casone
	Ascoli - Francesco D'Assisi	Milano
	Cardarelli	Milano
	Istituto San Giuseppe	Milano

	Quintino Di Vona	Milano
	Scuola Sec. I Grado L. Beltrami	Milano
	Scuola Sec. I Grado Scuola Europa	Milano
	Tiepolo	Milano
	Don Minzoni	Paderno Dugnano
	IC Daniela Mauro	Pessano C/B
	Breda	Sesto San Giovanni
	Don Milani	Sesto San Giovanni
	Falck	Sesto San Giovanni
	S.M.S Vignate	Vignate
Monza-Brianza	Leonardo Da Vinci	Bernareggio
	Salvo D'acquisto	Cesano Maderno
	Rodari	Desio
	S.M.S. Verga	Limbiate
	IC Piazza Caduti Di Via Fani	Lissone
	Don Milani	Seregno
	S. Giovanna D'arco	Seregno
	S.M.S. Fermi	Villasanta
Pavia	Angelini	Pavia
	Guglielmo Marconi	Rivanazzano Terme
	Gen. C.A. Dalla Chiesa	San Genesio
Sondrio	Vanoni	Morbegno
Varese	De Gasperi	Caronno Pertusella
	Giovanni XXIII	Cittiglio
	Fermi	Cunardo
	Fermi	Fagnano Olona
	Galvaligi	Solbiate Arno
	Don Rimoldi	Varese

Appendix 2: High schools on the territory.

Scuole Secondarie di Secondo Grado, equivalent of high school.

District	School	Type of Institute	Municipality
Bergamo	Caterina Caniana	Ist Prof per i Servizi Commerciali	Bergamo
	Guido Galli	Ist Prof per i Servizi Commerciali	Bergamo
	Secco Suardo	Liceo Scienze Umane	Bergamo
	Galileo Galilei	Liceo Scientifico	Caravaggio
	Andrea Fantoni	Liceo Scientifico	Clusone
	Cesare Battisti	Liceo Linguistico	Lovere
	Alfredo Sonzogni	Ist Prof per i Servizi Alberghieri e Ristorazione	Nembro
	Giambattista Rubini	Ist Prof Industria e Artigianato	Romano di Lombardia
	Giambattista Rubini	Ist Tec Commerciale e per Geometri	Romano di Lombardia
	Ettore Majorana	Ist Tecnico Industriale	Seriate
	Zenale e Butinone	Ist Tecnico Commerciale	Treviglio
Brescia	Abba-Ballini	Ist Tecnico Commerciale	Brescia
	Castelli	Ist Tecnico Industriale	Brescia
	Copernico	Liceo Scientifico	Brescia
	Olivieri Maffeo	Liceo Artistico	Brescia
	Sraffa	Ist Prof per i Servizi Commerciali	Brescia
	Darfo	Scienze Applicate	Darfo Boario Terme
	Putelli	Ist Prof per i Servizi Alberghieri e Ristorazione	Darfo Boario Terme
	Lumezzane	Ist Tecnico Industriale	Lumezzane
	Manerbio - Pascal	Liceo Scientifico	Manerbio
	Montichiari	Ist Prof per i Servizi Commerciali	Montichiari
	Orzinuovi - Cossali	Ist Tec Commerciale e per Geometri	Orzinuovi
Como	Caio Plinio Secondo	Ist Tecnico Commerciale	Como
	Volta	Liceo Classico	Como
Cremona	Munari	Liceo Artistico	Crema
	Sraffa	Ist Prof per i Servizi Commerciali e Turistici	Crema
	Torriani	Ist Tecnico Industriale	Cremona
Lecco	Rota	Liceo Scientifico	Calolziocorte
	Grassi	Liceo Scientifico	Lecco
	Vigano	Ist Tecnico Commerciale	Merate
Lodi	Cesaris	Ist Tecnico Industriale	Casalpusterlengo
	Novello	Liceo Scientifico	Codogno
Mantova	Falcone	Liceo Scientifico	Asola
	Strozzi Palidano	Ist Tecnico Agrario	Gonzaga
	Sanfelice	Ist Tecnico Commerciale	Viadana
Milano	Lombardini	Ist Prof per i Servizi Commerciali e Turistici	Abbiategrasso
	Pascal	Liceo Scientifico	Abbiategrasso
	Erasmo Da Rotterdam	Ist Tecnico Commerciale	Bollate
	Vico	Liceo Scientifico	Corsico
	Galileo Galilei	Liceo Scientifico	Legnano
	Boccioni	Liceo Artistico	Milano

	Cavalieri	Ist Prof per i Servizi Commerciali	Milano
	Einstein	Liceo Scientifico	Milano
	Giorgi	Ist Tecnico Industriale	Milano
	Manzoni	Liceo Classico	Milano
	S. Ambrogio	Liceo Classico	Milano
	Steiner	Ist Tecnico Industriale	Milano
	Vespucci	Ist Prof per i Servizi Alberghieri e Ristorazione	Milano
	Via Natta	Ist Tec Commerciale e per Geometri	Milano
	Virgilio	Istituto Magistrale	Milano
	Vittorio Veneto	Liceo Scientifico	Milano
	Machiavelli	Liceo Scientifico	Pioltello
	Puecher	Ist Prof Industria e Artigianato	Rho
	Spinelli	Ist Tecnico Industriale	Sesto San Giovanni
Monza-Brianza	Majorana	Liceo Scientifico	Desio
	Castiglioni	Ist Tec Agrario	Limbiate
	Hensemberger	Ist Tec Industriale	Monza
	Olivetti	Ist Prof per i Servizi Commerciali e Turistici	Monza
	Porta	Istituto Magistrale	Monza
	Primo Levi	Ist Tec Commerciale e per Geometri	Seregno
	Vanoni	Ist Tec Commerciale e per Geometri	Vimercate
	Vanoni	Liceo Linguistico	Vimercate
Pavia	Taramelli - Pavia	Liceo Scientifico	Pavia
	Alfieri Maserati	Ist Tec Industriale	Voghera
	Calvi	Ist Prof Industria e Artigianato	Voghera
	Galilei - Grattoni	Liceo Scientifico	Voghera
Sondrio	De Simoni	Ist Tec per Il Turismo	Sondrio
	Donegani	Liceo Scientifico	Sondrio
Varese	Falcone	Ist Prof per i Servizi Commerciali	Gallarate
	Grassi	Liceo Scientifico	Saronno
	Legnani	Liceo Classico	Saronno
	Orsoline Di S.Carlo	Liceo	Saronno
	Parma	Ist Prof Industria e Artigianato	Saronno
	Daverio- Casula	Ist Tec Commerciale	Varese

Appendix 3: Variables item and scales (translated).

Variables	Values
Gender	1= male; 2= female
Grade	1=I year of junior high school; 2=III year of junior high school; 3=II year of high school
Month	01=January; 02=February; 03=March [etc.]
Year	1993; 1994; 2004;…
Where were you born?	1=Italy; 2=Romania; 3=Albania; 4=Morocco; 5=China; 6=Ukraine; 7= other
Weight in Kg	kg= XXX
Frequency of dinner with parents	1=never; 2=less than once per week; 3=1 or 2 times a week; 4= 3 or 4 times a week; 5= 5 or 6 times a week; 6=everyday
Alcohol use last 30 days	1= never; 2= 1-2 days; 3= 3-5 days; 4= 6-9 dats; 5= 10-19 days; 6= 20-29 days; 7= 30 days or more
School relationships	
Students being together	1= strongly agree; 2= agree; 3= neither agree or disagree; 4= not agree; 5= definitely not agree
Students kind and helpful	1= strongly agree; 2= agree; 3= neither agree or disagree; 4= not agree; 5= definitely not agree
Students accept me	1= strongly agree; 2= agree; 3= neither agree or disagree; 4= not agree; 5= definitely not agree
Teacher accepts	1= strongly agree; 2= agree; 3= neither agree or disagree; 4= not agree; 5= definitely not agree
Teacher cares	1= strongly agree; 2= agree; 3= neither agree or disagree; 4= not agree; 5= definitely not agree
Feel trust in teacher	1= strongly agree; 2= agree; 3= neither agree or disagree; 4= not agree; 5= definitely not agree
Teacher treat us fairly	1= strongly agree; 2= agree; 3= neither agree or disagree; 4= not agree; 5= definitely not agree
Psychosocial wellbeing in the last week	
Feeling full of energy	1=never; 2= sometimes; 3= often; 4= really often; 5= always
Feeling sad	1=never; 2= sometimes; 3= often; 4= really often; 5= always
Feeling lonely	1=never; 2= sometimes; 3= often; 4= really often; 5= always
Time for yourself	1=never; 2= sometimes; 3= often; 4= really often; 5= always
Time for doing what you like	1=never; 2= sometimes; 3= often; 4= really often; 5= always

Enjoying time with friends	1=never; 2= sometimes; 3= often; 4= really often; 5= always
Perceived weight of your body	1= definitely too thin; 2= a little to thin; 3= the right size; 4= a little too fat; 5= definetly too fat

Medicine in the last month

Medicine headhache	1= no; 2= yes, once; 3= yes, more than once
Medicine smomach-ache	1= no; 2= yes, once; 3= yes, more than once
Medicine sleeping difficulties	1= no; 2= yes, once; 3= yes, more than once
Medicine nervousness	1= no; 2= yes, once; 3= yes, more than once
Medicine for cold	1= no; 2= yes, once; 3= yes, more than once
Medicine for allergies	1= no; 2= yes, once; 3= yes, more than once
Medicine for other causes	1= no; 2= yes, once; 3= yes, more than once

Bullying frequency

Bullied past two months	1= not victimized; 2= once or twice; 3=two or three times per month; 4= once a week; 5= more times per week
Bullying others in the past two months	1= not a bully; 2= once or twice; 3=two or three times per month; 4= once a week; 5= more times per week
Cyberbullied by messages	1=not cyber-victimized; 2= once or twice; 3=two or three times per month; 4= once a week; 5= more times per week
Cyberbullied by pictures	1=not cyber-victimized; 2= once or twice; 3=two or three times per month; 4= once a week; 5= more times per week

Family support

Family tries to help	1= I strongly disagree; 2= 2; 3= 3; 4= 4; 5= 5; 6= 6; 7= I strongly agree
Get emotional help	1= I strongly disagree; 2= 2; 3= 3; 4= 4; 5= 5; 6= 6; 7= I strongly agree
Talk about problems	1= I strongly disagree; 2= 2; 3= 3; 4= 4; 5= 5; 6= 6; 7= I strongly agree
Help make desicions	1= I strongly disagree; 2= 2; 3= 3; 4= 4; 5= 5; 6= 6; 7= I strongly agree

Parental control

Your mother knows who are your friends	1= he/she knows; 2= knows a little; 3= does not know; 4= I do not have this person or I never see him/her
Your mother knows how do you spend money	1= he/she knows; 2= knows a little; 3= does not know; 4= I do not have this person or I never see him/her
Your mother knows where are you after school	1= he/she knows; 2= knows a little; 3= does not know; 4= I do not have this person or I never see him/her
Your mother knows where are you in the evening	1= he/she knows; 2= knows a little; 3= does not know; 4= I do not have this person or I never see him/her

Your mother knows what do you do in your spare time	1= he/she knows; 2= knows a little; 3= does not know; 4= I do not have this person or I never see him/her
Your father knows who are your friends	1= he/she knows; 2= knows a little; 3= does not know; 4= I do not have this person or I never see him/her
Your father knows how do you spend money	1= he/she knows; 2= knows a little; 3= does not know; 4= I do not have this person or I never see him/her
Your father knows where are you after school	1= he/she knows; 2= knows a little; 3= does not know; 4= I do not have this person or I never see him/her
Your father knows where are you in the evening	1= he/she knows; 2= knows a little; 3= does not know; 4= I do not have this person or I never see him/her
Your father knows what do you do in your spare time	1= he/she knows; 2= knows a little; 3= does not know; 4= I do not have this person or I never see him/her

Internet activities

Forum/blog	1= always; 2= often; 3= sometimes; 4= never
Social networks	1= always; 2= often; 3= sometimes; 4= never
Online Gaming	1= always; 2= often; 3= sometimes; 4= never
Type of phone	1= I don't have one; 2= yes I have one, without internet connection; 3= yes, I have one with limited internet connection; 4= yes, I have one with unlimited internet connection

Family Affluence Scale

Family car	1= no; 2=yes, one; 3= yes, two or more
Ownbedroom	1= no; 2= yes
Number of computers	1= no; 2= one; 3= two; 4= more than two
Family holidays in the last year	1= never; 2= once; 3= twice; 4= more than twice

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The Ph.D. thesis is a unique kind of composition. It challenges the candidate to sum up in a few chapters the story of a three-years long journey into the world of research. It is also a story about knowledge and curiosity, which requires to be narrated both passionately, transmitting motivation and commitment, and carefully, paying attention to details. Given the difficulty of such a task, I will end by gratefully acknowledging all the people who made my journey possible.

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