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Exploring European children's self-reported data on online aggression

Abstract: To address the topic of children's online aggression, this article explores a subsample from the EU Kids Online dataset (2017–2019) of 1404 children, aged 9–16, who reported having engaged in aggressive acts online in the previous year. Through a cluster analysis, respondents were classified into three groups. Findings emphasize the risk factors for aggression and how they relate to age-specific developmental tasks. Boys predominate, but the gender gap is not as wide as in offline contexts. For almost half of the children, aggression goes hand in hand with victimization. All the clusters share high levels of emotional deprivation. A sense of lacking social support, from both adults and peers, becomes more relevant among those children with high and more problematic engagement in online aggression. Results confirm that online aggression must be considered within the complex and fluid offline–online continuum cutting across the social contexts in which children grow.

Keywords: children's online aggression, victimization-aggression overlap, EU Kids Online, developmental tasks, digital parenting

1 Introduction

Most children living in the Global North are deeply embedded in an "onlife" (Floridi, 2017), that is, a social world both analogical and digital, online and offline. Plurality, fluidity, and flexibility are interrelated conditions in these chil-

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dren's social worlds (Baraldi and Cockburn, 2018), intersected by media ubiquity, convergence, innovation, and datafication (Donner, Jennings, and Banfield, 2015; Couldry and Hepp, 2017; Leukfeldt and Holt, 2020).

Children's digital practices are mainly related to entertainment and communication, followed by looking for information that fits their interests (Livingstone, Haddon, Görzig, and Ólafsson, 2011; Smahel et al., 2020). These activities are not conclusively positive or negative, as that depends on a diversity of (f)actors (Brewer, Cale, Goldsmith, and Holt, 2018; Farrington, 2020; Staksrud, 2009; Zych et al., 2020). As internet use has become more prevalent than ever in everyday life, the potential for a "digital drift" (Goldsmith and Brewer, 2015) in crucial stages of personal development, such as adolescence (Valkenburg and Piotrowski, 2017), has also substantially increased.

This article explores the results of the EU Kids Online survey (2017–2019), in which six percent (n=1404) of European children aged 9–16 reported having engaged in aggressive acts through digital technologies. Our research questions are:

i.　Is there a relationship between internet access and uses, on the one hand, and engagement in online aggression, on the other?
ii.　What are the main psychological traits, age, and gender of the children who report online aggressive conduct?
iii.　Which kinds of social mediation, particularly from the family, are associated with online aggressors?

Based on an interdisciplinary and evidence-based approach incorporating contributions from Media Studies, Psychology, Sociology, and Criminology, the literature review intersects two areas of research: children and the internet, and the victim-aggressor overlap in offline and online environments. This comprehensive analytical approach adds an intersectoral value that is often missing from existing literature, acting as a framework for a multivariate analysis of the EU Kids Online subsample of children who reported engagement in online aggressive practices. The analysis is based upon a set of questions regarding online experiences to characterize and discuss profiles of online aggressors, contributing to the advancement of knowledge, and to the favoring of prevention practices and policies (Aiken, Davidson, and Amann, 2016; Gaffney, Farrington, Espelage, and Ttofi, 2019; Leukfeldt, Jansen, and Stol, 2014; Ttofi and Farrington, 2012).

2 Aggression in the digital lives of children and adolescents

Defining online aggression

As a multifaceted phenomenon, the concept of human aggression has been commonly associated with any behavior directed at another individual and carried out with the intention of causing harm to someone who does not wish to be harmed (Bandura, 1973; Berkowitz, 1993). Traditionally, the focus was on physical forms of aggression, as physical injury was potentially inflicted. With the increasing complexity of human relations and social interaction, non-physical forms of aggression (verbal, psychological, emotional, among others) resulting in various types of harm have been considered. Male levels of aggression tend to be higher than female ones, at every age and for all types of acts (Kruttschnitt, 2013; Salvatore and Markowitz, 2014).

Little's taxonomy (Little, Henrich, Jones, and Hawley, 2003) presents four subtypes of aggressive behavior combining two axes. The first axis considers the forms of aggression: *overt*, involving direct confrontation with the victim; *relational*, damaging the victim's social status or reputation and isolating her or him from social groups to which she or he belongs. The second axis considers its functions: *proactive*, based on the evaluation of consequences and anticipated goal of causing harm; *reactive*, essentially emotional and impulsive. Rieffe et al. (2016) suggest that children can distinguish their own motives for reactive and proactive forms of aggressive behavior.

The complexity of contemporary online life has raised new questions, since the faceless nature of digital interactions creates more personal ambivalence than do face-to-face encounters (Goldsmith and Brewer, 2015). The existence of an intention to cause harm to a specific target and of a potential target motivated to avoid such harm were traditionally key conditions for labeling any behavior as aggressive (Anderson and Bushman, 2002). As the perception of intent is essential to this process, the same aggressive act could be perceived in different ways, since it is dependent on individual judgment factors (Bandura, 1973). While time and space are becoming less synchronous, norms have also become more fluid and the strict boundaries between what is considered to be wrong and right are frequently questioned (Holt, Brewer, and Goldsmith, 2019).

Often, online aggression is subtle, and it may be harder to observe intention and all its outcomes for the potential victims (Amichai-Hamburger, 2013). The term "online aggression" as used in the EU Kids Online questionnaire designates hurtful interactions mediated through online technologies, whether or not

repeated over time. This may encompass a wide range of harassing, threatening, embarrassing, unwanted and/or excluding behavior toward another individual, based on the subjective perspective of the respondents – in this case, children who perceive their online actions as aggressive.

A developmental approach to adolescent online aggression

A development-oriented approach to the study of aggression, particularly concerning its continuities and discontinuities across the lifespan (Eisner and Malti, 2015; Hartup, 2005; Piquero, Carriaga, Diamond, Kazemian, and Farrington, 2012), becomes relevant as this article considers the development of children and adolescents who present themselves as online aggressors and their interactions with others.

The concept of developmental tasks was introduced by Havighurst (1972[1948]) to designate socialization goals that must be achieved in particular biographical transitions. Expanding on Havighurst's concept, Heymans (1994) defines developmental tasks as a period during which the individual has the opportunity to prove or to make plausible to a specific audience that she or he is capable of performing certain actions. An illustration is the social media environment, in which self-disclosures and self-presentations are continuously (re)constructed through what children and adolescents "explicitly provide, through what their friends share and as a product of how other people respond to them" (boyd, 2014, p. 49).

In spite of changes in the social and cultural contexts, some developmental tasks pointed out by Havighurst remain up-to-date regarding adolescence: adjusting to one's developing sexuality, building a coherent identity, establishing intimate relations with peers and romantic partners, and achieving emotional independence from parents and other adults.

Both mass and social media act as contexts for those developmental tasks (Subrahmanyam and Smahel, 2011; Valkenburg and Piotrowski, 2017). While mass media-driven templates such as drama, reality shows, or celebrity news provide experiences through which young people learn how attention operates, social media play a crucial role in terms of social acceptance (boyd, 2014) and of co-creation of online contexts (Subrahmanyam and Smahel, 2011). The affordances of social media (the persistence of online expressions and content; the potential audience who can bear witness; the ease with which content can be shared; the ability to find content) create both opportunities and challenges for their networked publics – and when attention becomes a commodity, interpersonal conflicts emerge and battles over reputation, status, and popularity can be intentionally or accidentally hurtful to others (boyd, 2014).

For children and adolescents, the meanings of online problematic situations sometimes correspond to blurry categories. While aggressive communication encompasses "swear words", "bad language", "calling names", and "cursing", some stories of aggressive communication with friends are perceived as innocent jokes connected with the offline world (Smahel and Wright, 2014).

The victim–aggressor overlap

Often, victimization and aggression have been examined as dichotomized analytical categories (Eisner and Malti, 2015; Martinez-Ferrer, Moreno, and Musitu, 2018). However, since the mid-20th century, a growing body of literature has shown that the same child may be engaged in both roles; therefore, labeling processes are critical (Farrington, 2020; Gaffney et al., 2016; Van Gelder, Averdijk, Eisner, and Ribeaud, 2015). Only some of the aggressors were/become victims of aggression, and not all victims end up engaging in aggressive conducts, but both share similar demographic and individual-level characteristics (Jennings, Piquero, and Reingle, 2012; Ttofi and Farrington, 2012). This explains how victims are more likely to be aggressors than non-victims and aggressors are more likely to be victims than non-aggressors (Lauritsen and Laub, 2007; Van Gelder et al., 2015).

Studies on children involved in different roles in online aggression (victim, perpetrator, or both), and the transitions between these roles, take account of the sociopsychological individual characteristics (Finkelhor, 2008; Van Gelder et al., 2015; Zych et al., 2020). Among those, low self-control is a major predictor of online aggression and of the victimization–aggression overlap (Agbaria, 2020; Bossler and Holt, 2010). Low self-control is more associated with short-sighted, impulsive, and insensitive decisions based on inaccurate judgements and misperceptions concerning the consequences of personal actions (Berg and Felson, 2016; Ousey, Wilcox, and Fisher, 2011). As neuroscience studies (Noble, 2017; Steinberg, 2017) reveal, adverse experiences in childhood impact the development of self-control, impulsiveness, and empathy, while the adolescent brain is highly susceptible to reward and peer influence.

A growing body of literature suggests that children who transit from the role of victim to the one of aggressor and vice-versa tend to show a more unstable developmental trajectory compared to those who remain in the same role (victim or aggressor) over time (Zych et al., 2020). Some authors suggest a negative relation between victimization and aggression (Ousey et al., 2011). However, victims are not a homogeneous group, and while some are passive subjects of aggression, others are not (Van Gelder et al., 2015). Furthermore, victimization affects

different children differently (Finkelhor, 2008). Most empirical studies show that aggressors have a higher risk of victimization. The experience of aggressors having been victimized first is more common than the experience of aggressors transitioning from aggressive behavior to being victims. As the consequences of the risk of victimization during childhood affect children's personality development, mental health, and academic performance, and have implications for the development of delinquent and antisocial behaviors, Finkelhor (2008) identifies mechanisms that affect the sequential processes of instigation, selection, and protection from aggression at the environmental and victim levels (Table 1).

Table 1: Victimization risk analysis model.

LEVEL/PROCESSES	Instigation processes (mechanisms that increase the likelihood or motivation for offending)	Selection processes (mechanisms that govern the choice of particular victims out of the universe of all possible victims)	Protection Processes (mechanisms in the absence of which the ability to ward off, deter, or escape victimization is reduced)
Environmental level	Social conflict Family conflict/adversity Offense-promoting norms	Accessibility Neighborhood Online School Family	Poor supervision Social isolation
Victim level	Aggressive behavior Irritability Sexualized behavior	Age Gender Ethnicity	Physical impairment Emotional deprivation Lack of knowledge

Source: Finkelhor (2008, p. 62) (adapt.)

Research on the victim–aggressor overlap among internet users has mainly focused on cyberbullying (Martinez et al., 2018), although not all aggressive behavior is bullying (boyd, 2014; Goldstein, 2015). To the classic definition of bullying (Olweus, Limber, and Mihalic, 1999) as involving psychological, physical, and/or social aggression, repetition, and imbalance in power, definitions of online bullying have added anonymity and public versus private action (Ybarra, boyd, Korchmaros, and Oppenheim, 2012). However, labeling interpersonal conflicts (such as individual acts of harassment, one-off fights, or reciprocal acts of relational aggression) as bullying "does not help teens navigate the complicated interpersonal dynamics and social challenges that they face", says boyd

(2014, p. 136), who appeals for attention to be given to teens' language and cultural norms. Attention should also be paid to "the characteristics of bullies and victims, the relation between offline and online bullying, and consequences of such victimization" (Subrahmanyam and Smahel, 2011, p. 223).

Exposure factors for cyberbullying are the anonymity provided by the internet, the relational nature of the aggression, the high frequency of internet use, advanced internet skills, or the willingness to share personal and intimate information online (Dooley, Pyzalski, and Cross, 2009; Heirman and Walrave, 2008; Mesch and Talmud, 2010). Boys commit more cyberbullying than girls, while girls are more likely to be a cyber- as opposed to a face-to-face bully (Görzig and Ólafsson 2013). There is no significant gender difference in cybervictimization (Sorrentino, Baldry, Farrington, and Blaya, 2012). Age is a significant predictor of cyberbullying, and children holding a higher belief in their internet abilities are significantly more likely to bully on the internet and mobile phone than exclusively face-to-face (Görzig and Ólafsson 2013).

While cyberbullying has been explored fairly often, there is a relative lack of attention given to the nuances of the interaction between victims and perpetrators, and to the affordances of different platforms that facilitate this victimization (Seetharaman and Bhatt, 2019).

Children and adolescents' "digital drift"

Recent criminological research targeting online offending and delinquent acts also offers a potential contribution to this analysis. Based on Matza's (1964) drift theory, the concept of "digital drift" (Goldsmith and Brewer, 2015) suggests that everyday personal-computer and internet use may expand children's interactions and opportunities for "drifting digitally" in and out of aggressive encounters, since identity flexibility is offered and pro-social influences seem less effective due to the relative absence of capable guardians.

Two key features of the "digital drift" are relevant to the discussion presented herein. First, the children's self-reported aggressive behaviors are seen as a result of the intensification of online risks and opportunities in children's lives, as they are increasingly engaged with internet platforms for multiple educational and recreational purposes. Often, children's behaviors in physical and digital social worlds are intertwined and supported by transactional links with each other (Brewer et al., 2018; Subrahmanyam and Smahel, 2011). Furthermore, the new de-territorialized encounters and opportunities for online aggression cannot be dissociated from their relation to the nature of social control and pro-social influences in adolescents' lives, nor from the latter's previous experiences of vic-

timization. They may not only be more exposed to, but also be more involved in, digital risk-taking actions and aggressive communication as victims, aggressors, or in the dual condition of victims-aggressors. Even if episodic for the vast majority of children and adolescents, aggression in digital media tends to become unpredictable and simultaneously often easier to carry out (Brewer et al., 2018; Goldsmith and Wall, 2019).

Second, affordances of online contexts may also favor online aggressive behavior by adolescents: the ease of use, a sense of competence or mastery, the speed of access, the absence of charge, an uninhibited behavior favored by anonymity, an overstimulation that favors a level of vertigo, a sense of unreality, the curiosity regarding the exploration of difference, and the asymmetry in the human-technology relation due to the lack of full individual control over the internet design (Goldsmith and Wall, 2019). However, what tends to separate aggressors from non-aggressors is the nature of the control placed upon each child's life, whether at the internal level, by oneself (self-control), or from external sources at the micro and meso levels, such as family, peers, friends, school, and the community's individuals and groups, or at the macrolevel, by the law, other institutional groups, and society.

3 Methodology

This article explores data from the EU Kids Online dataset (2017–2019), elaborated on the basis of a questionnaire applied to children and young people in 19 European countries with a total of 25,101 participants, the goal of which was to characterize patterns of use of technology and derived experiences. Although different methods of sampling and collecting data were used (see Smahel et al., 2020), some common criteria (age, sex, region, and rural/urban areas) were defined to ensure the representativeness and viability of the data.

To address both the topics of digital media and of children's online aggression, the analysis focuses on a subsample of 1,404 children aged 9–16 who reported having engaged in aggressive acts online in the previous year. Specifically, we considered 1) the children who reported having *treated someone else in a hurtful or nasty way* and, among these, those who 2) did it at least a few times *via mobile phone or internet*, whether or not combined with other means of aggression.

The creation of profiles was carried out through a multivariate analysis developed in two main steps via IBM SPSS (version 26). First, a Multiple Correspondence Analysis (MCA) allowed us to identify the system of relations between the

selected variables, both on the topics of digital media and of children's online aggression, and the association between their categories. Then, we divided the respondents into groups through a cluster analysis (using the non-hierarchical method K-means), based on the position of each individual in the two dimensions of the factorial plan.

In order to characterize the profiles created, we observed the distribution of several variables in these groups, considering the Qui-Square test and its significance. We considered their age, gender, emotional behavior and psychological traits, communicative engagement and participation, problematic practices, perceptions and feelings related to the online environment, and, lastly, social mediation. The results refer to valid data and were weighted by sex, age, and region.

Measures and identification of profiles

The definition of profiles considered variables related to internet access and uses, on the one hand, and engagement in online aggression and victimization, on the other (see Table 2).

The measures of internet access and uses comprise, firstly, the frequency of access to the internet by *mobile phone or smartphone* and by *desktop computer, laptop, or notebook computer*. Participants were asked to position themselves on a frequency scale of seven points (from "never" to "almost all the time"), which was then transformed into three points. Secondly, the *time spent on the internet* was computed based on the children's estimation regarding weekdays and weekends. The average time was recoded into five points (from "up to one hour" to "seven hours or more"). Thirdly, a scale of digital skills derived from 11 statements was recoded into three categories: low, medium, and high.

The measures of online aggression and victimization take into account the frequency of aggression by means, namely *in person, face-to-face, via mobile phone or internet*, and in *some other way* (e.g., voice messages or text) as well as the frequency of having been treated in a hurtful or nasty way online in the previous year. In both cases, the original scale was recoded into three points (never, a few times, and at least every month). The differences in frequency allow us to distinguish between sporadic aggression/victimization and aggression experiences of a more repetitive and prolonged nature.

Table 2: Descriptive measures of the variables used.

	Variables	Categories	%
Frequency of aggression, by means	In person face-to-face	Never (F2F.N)	22.5
		A few times (F2F+)	54.8
		At least every month (F2F++)	22.7
	Via mobile phone or internet	A few times (Net+)	67.3
		At least every month (Net++)	32.7
	Some other way	Never (Other.N)	64.1
		A few times (Other+)	21.8
		At least every month (Other++)	14.1
Frequency of being treated in a hurtful or nasty way online last year		Not a victim (Not.Victim)	44.1
		Victim	45.2
		Bullied	10.7
Frequency of access to the internet, by devices	A mobile phone or smartphone	Never/hardly ever (Phone.N)	5.3
		Week/Month (Phone+)	4.5
		Daily (Phone++)	90.2
	A desktop computer, laptop or notebook computer	Never/hardly ever (Desktop.N)	17.4
		Week/Month (Desktop+)	28.4
		Daily (Desktop++)	54.1
Time spent on the internet		Up to one hour (<1hr)	7.1
		1–2 hours (1–2 hrs)	10.3
		2–3 hours (2–3 hrs)	13.9
		3–6 hours (3–6 hrs)	43.5
		7 hours or more (7hrs+)	25.2
	Skills scale	Low (Skills_L)	10.8
		Medium (Skills_M)	21.7
		High (Skills_H)	67.4

Source: EU Kids Online (2017–2019)

The results point to three patterns of aggressive online experiences organized in two dimensions (see Annex 1). The first dimension refers to the experiences of victimization/aggression, namely the means and frequency of aggression and the frequency of being subjected to aggression. The second dimension concerns the means and frequency of access to the internet, the time spent online, and a digital-skills scale.

In Figure 1, the categories of low and no aggression (face-to-face or other) and victimization are displayed on the right side of dimension 1; in dimension 2, the categories of an intense internet use and high digital skills (lower side) are opposite to a lower or lack of internet use and medium to low digital skills (upper side).
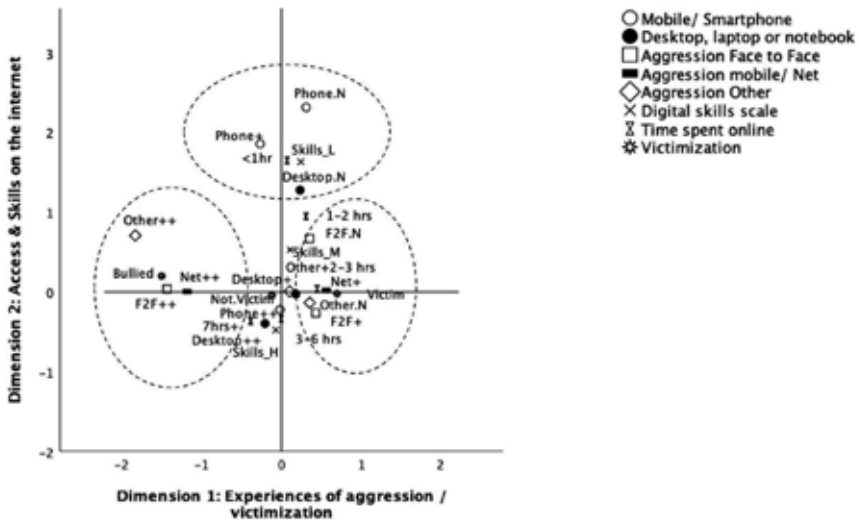

Figure 1: Projection of children's online aggression profiles.

The respondents were classified into three groups through a cluster analysis. For a start, we analyzed the descriptive measures of the variables that contributed to the definition of profiles by cluster (Table 3), in order to describe and name them. We moved on to explore their individual characteristics, namely age, gender, and psychological traits, particularly those related to self-control. Then, we analyzed online activities and exposure to online problematic situations. Finally, we considered the social mediation provided by family, peers, teachers, and other adults.

Table 3: Descriptive measures by cluster.

	Cluster I: Emerging users, emerging aggressors (n=219)	*Cluster* 2: High users, high aggressors (n=290)	*Cluster* 3: High users, occasional aggressors (n=901)
Frequency of aggression face-to-face			
Never	53.8	4.8	19.7
A few times	35.8	12.6	73.6
At least every month	10.5	82.6	6.7
Frequency of aggression via mobile phone or internet			
Never	0.0	0.0	0.0
A few times	74.2	7.6	84.6
At least every month	25.8	92.4	15.4
Frequency of aggression via some other way			
Never	57.4	29.7	76.9
A few times	23.6	17.2	22.8
At least every month	19.0	53.1	0.3
Frequency of being treated in a hurtful or nasty way online last year			
Not a victim	46.8	48.2	42.4
Victim	45.3	13.3	53.7
Bullied	7.9	38.6	3.8
Frequency of access to the internet by a mobile phone or smartphone			
Never/hardly ever	28.1	1.2	0.5
Week/Month	19.6	3.6	0.9
Daily	52.3	95.2	98.6
Frequency of access to the internet by a desktop computer, laptop or notebook computer			
Never/hardly ever	52.6	11.2	10.3
Week/Month	23.1	23.3	31.5
Daily	24.3	65.5	58.2
Time spent on the internet			
Up to one hour	33.6	3.7	1.4
1–2 hours	24.6	6.2	7.9
2–3 hours	10.2	7.2	17.0
3–6 hours	21.9	43.1	49.3
7 hours +	9.8	39.8	24.5

Table 3: (continued)

	Cluster I: **Emerging users, emerging aggressors (n=219)**	Cluster 2: **High users, high aggressors (n=290)**	Cluster 3: **High users, occasional aggressors (n=901)**
Skills scale			
Low	48.6	4.8	3.4
Medium	32.2	16.8	20.7
High	19.1	78.4	75.8

4 Results

The distribution of variables by cluster (Tables 4 to 6) anticipates the characterization of each cluster and the cross-view of the results.

Table 4: Individual characteristics by cluster.

	Cluster 1: (n=219)	*Cluster* 2: (n=290)	*Cluster* 3: (n=901)
*Gender****			
Boy	57.4	70.4	56.2
Girl	42.6	29.6	43.8
*Age group****			
9–11 years old	43.1	17.2	9.3
12–14 years old	36.8	44.2	44.8
15–16 years old	20.2	38.5	45.9
Emotional characteristics (fairly/very true)			
*I get very angry and often lose my temper****	29.2	44.5	37.2
*I am often accused of lying or cheating****	26.2	32.6	18.1
*I take things that are mine from home, school or elsewhere ****	16.7	17.5	5.6
*I am often unhappy, sad or tearful***	31.8	38.5	25.9
*I do dangerous things for fun****	14.4	42.1	22.8
*I do exciting things, even if they are dangerous****	20.3	52.0	32.7

***p<.001; ** p<.01: *p<.05

Table 5: Online activities by cluster.

	Cluster 1: (n=219)	Cluster 2: (n=290)	Cluster 3: (n=901)
Engaged communication and participation (at least every month)			
I used the internet to talk to people from other countries**	39.1	54.4	43.1
I got involved online in a campaign, protest or I signed a petition online***	12.3	17.0	8.2
I discussed political or social problems with other people online***	15.7	32.6	19.4
I created my own video or music and uploaded it to share**	21.7	34.6	23.7
I played online games**	72.7	84.7	74.7
I participated in an online group where people share my interests or hobbies***	31.2	59.5	46.9
Feelings related to the online context (often/always)			
I feel safe on the internet***	43.9	68.9	67.4
I find other people are kind and helpful on the internet***	34.7	44.7	42.0
I know what to do if someone acts online in a way I don't like***	48.6	74.0	75.6
I find it easier to be myself online than when I am with people face-to-face***	34.4	49.5	37.6
I talk about different things online than I do when speaking to people face-to-face***	30.5	42.5	32.7
I talk about personal things online which I do not talk about with people face-to-face***	22.8	29.1	18.1
Risk activities online (at least every month)			
I looked for new friends or contacts on the internet***	23.4	59.0	42.3
I sent my personal information***	12.8	23.3	9.9
I added people to my friends or contacts I have never met face-to-face***	26.5	46.0	31.0
I pretended to be a different kind of person online from who I really am***	17.6	27.7	12.5
I sent a photo or video of myself to someone I have never met face-to-face***	16.6	30.7	14.9
In the PAST YEAR, have you EVER SEEN any sexual images?***	54.3	81.5	73.9
Data misuse and problematic situations related to money in the past year			
I lost money by being cheated on the internet***	17.3	16.8	8.6
Somebody used my password to access my information or to pretend to be me	22.1	25.6	19.2

Table 5: (continued)

	Cluster 1: (n=219)	Cluster 2: (n=290)	Cluster 3: (n=901)
Somebody created a page or image about me that was hostile or hurtful***	15.0	22.6	8.9
I spent too much money on in-app purchases or in online games***	21.1	31.0	17.4

***p<.001; ** p<.01: *p<.05

Table 6: Social mediation by cluster.

	Cluster 1: (n=219)	Cluster 2: (n=290)	Cluster 3: (n=901)
Online harm and social coping			
In the past year, has anything EVER happened online that bothered or upset you in some way (e. g., made you feel upset, uncomfortable, scared or that you shouldn't have seen it)?	61.6	56.5	60.7
The last time something happened online that bothered or upset you, did you talk to anyone of these people about it?			
Mother or father***	52.9	27.2	30.3
Brother or sister***	31.9	13.5	14.1
A friend around my age*	49.2	54.9	62.6
A teacher	6.2	9.2	4.0
Someone whose job it is to help children**	10.2	5.8	2.9
Another adult I trust**	23.2	12.5	10.0
Someone else	16.9	16.0	11.8
I didn't talk to anyone	19.9	21.4	24.5
Family communication (fairly/very true)			
When I speak someone listens to what I say***	55.9	64.5	73.4
My family really tries to help me ***	78.4	75.4	83.9
I feel safe at home ***	75.1	81.3	88.8
Parental mediation (often/very often)			
[My parent/carer] Encourages me to explore and learn things on the internet**	18.0	26.5	22.3
[My parent/carer] Talks to me about what I do on the internet*	29.3	19.9	21.3

Table 6: (continued)

	Cluster 1: (n=219)	Cluster 2: (n=290)	Cluster 3: (n=901)
I helped my parent or carer to do something they found difficult on the internet ***	37.6	47.4	50.6
I asked for my parent's or carer's help with a situation on the internet that I could not handle *	23.5	12.5	15.3
Parents use of technological control			
*Parental controls or other means of blocking or filtering some types of content***	32.0	23.1	13.4
*Parental controls or other means of keeping track of the internet content I look at or apps I use***	32.1	19.0	13.5

***p<.001; ** p<.01: *p<.05

Emerging users, emerging aggressors

Children in cluster 1 are the least numerous and have the lowest ratios of access to devices, duration of use, and reported skills. Two-thirds reported having practiced online aggression sometimes in the previous year, and almost half had been victims of negative online situations. More than four in ten are 9 to 11 years old, immediately followed by those aged 12–14. Their gender ratio (slightly more boys than girls) is similar to cluster 3.

Emotionally, around one-third reported often experiencing unhappiness, lacking self-control, and being accused of anti-social behavior; one in five reported they often did exciting things even if those things were dangerous.

Although they present the lowest rates of online confidence and sense of online safety, a significant number was engaged in communicative practices involving self-exposure to people they may not have previously met face-to-face. In the previous month, four in ten had talked with people from other countries, and one in three had participated in online groups sharing similar interests or hobbies. Searching contacts had led around a quarter to actively look for new friends and add people to their contact lists they had never met face-to-face. One in five had created videos and uploaded them for sharing, which suggests a wish to attract others' attention as well. Furthermore, one in three often found it easier to be themselves and talk about different things online rather than face-to-face. Meanwhile, some had been online victims in the previous year: Around one in five had lost money due to being cheated online, spent

too much money on purchases and games, and experienced abuse of his or her identity.

Having reported slightly more bothering online situations than the other clusters, for children in cluster 1, parents and peers were the main social support – this is the single cluster that places parents first. In this regard, a third pointed to their siblings, while a quarter pointed to other adults they trusted; professionals whose job is to help children were more reported than in the other clusters. One in five children did not talk to anyone, similarly to other clusters and in line with the global results (Smahel et al., 2020).

Although parents are a key source of support in relation to bothering situations, and despite most children considering feeling safe at home and being helped by their families, more than half reported that their own voices were often ignored at home. The gap between children and parents is even wider on digital issues: More than half pointed out that parents neither encouraged them to explore and learn things on the internet nor talked to them about what they did online. One third reported parental use of technological devices to monitor their behavior, which is the highest rate out of the three clusters. Nevertheless, almost four in ten children often acted as digital helpers for their parents.

High users, high aggressors

Cluster 2 refers to children who reported the most aggressive practices and the most intense victimization, online and offline, spending the most time on the internet, using the computer the most and estimating the highest digital skills. Mainly aged 12+, seven in ten are boys. They present the highest emotionally and socially problematic behaviors: More than half reported doing exciting things even if they were dangerous – slightly more than those who did dangerous things for fun –, losing self-control, and experiencing unhappiness. Around one in three was also accused by others of lying and cheating.

Online, they are by far the most engaged in almost all communication and participatory practices, in which they expose themselves and take risks related to their privacy and safety. Six in ten looked for new friends or contacts at least every month and participated in online groups where people share their interests or hobbies. These practices were followed by talking with people from other countries and adding people they had never met face-to-face to their contacts. Around a third were regularly engaged in content creation for sharing and participated in discussions on political and social issues. In the previous year, almost four in five had seen sexual images, which is the highest value out of the three clusters.

Around seven in ten often/always felt safe online and were convinced they knew what to do if someone acted in a way they did not like. Furthermore, almost half found it easier to be themselves online rather than face-to-face and considered that other people were kind and helpful on the internet. They strongly trusted the online environment and their own skills for exploring their identity and anonymity, although a quarter had experienced violation of their data and situations of identity abuse. They are close to cluster 1 in regard to having lost money and having been cheated in the previous year.

When they experienced bothering or upsetting situations, peers doubled parents as the main source of support. Teachers, professionals whose job is to help children, and other adults they trusted were less reported than in cluster 1.

Regarding communication, support, and safety at home, this cluster occupies an in-between position. More than three in five felt safe at home and recognized family support as fairly/very true, a rate slightly higher than the rate of those who considered they were listened to when they spoke. Communication is also an issue, since more than half reported that their parents hardly ever talked with them about what they did online (a situation that was frequent for only a fifth of the children). Being encouraged by parents to explore the internet and learn things never occurred for almost half of the children, while it was true for around a quarter. Almost half were often the digital helpers at home. Parental controls for blocking, filtering, or tracking contents have been reported by around a fifth of the children.

High users, occasional aggressors

Children in cluster 3, the largest one, reported having engaged in a few aggressive practices in the previous year, online and face-to-face. Half of the individuals had also occasionally experienced victimization. More than half are frequent internet users, accessing it for 3–6 hours a day and self-reporting high-level digital skills.

Nine in ten are aged 12–16, and boys are slightly more numerous than girls, as in cluster 1. Around a third reported frequently losing self-control and doing exciting things even if those things were dangerous, while a quarter pointed out frequent feelings of unhappiness and risk-taking behaviors for fun. Antisocial behaviors (robbery, lying, and cheating) were far less reported than in the previous clusters.

Children in cluster 3 also reported frequent activities involving communication, engagement, and content creation at least once a month, and almost all rates are slightly similar to those of cluster 1. In line with their developmental tasks, the largest difference is related to participation in online groups where people share

their interests and hobbies, which was reported by almost half of the children; almost three in four reported they had seen sexual images in the previous year.

As in cluster 2, around two-thirds of the children felt safe online, almost half considered that online people were kind and helpful and – above all – three in four were confident that they knew what to do if someone acted online in a way they did not like. Cluster 3 presents the lowest rates of experiencing data misuse and problematic situations related to money.

Around a third found it easier to be themselves online and to talk online about different things that they silenced face-to-face. These rates are almost twice the rate of those who often talked about personal things which they would not talk about face-to-face (18 %, the lowest rate). In line with a more cautious behavior regarding privacy and identity management, cluster 3 presents the lowest values regarding sending personal information or pretending to be a different kind of person.

Three in five children reported having experienced bothering or upsetting situations in the previous year. When this happened, peers (62 %) more than doubled parents (30 %) as the main source for advice. One in ten reported having talked with adults they trusted, placing them above teachers and professionals whose job is to help children.

Cluster 3 presents the highest level of perceptions concerning their family's attention, support, and safety. However, almost half reported that their parents neither encouraged them to explore and learn things on the internet nor talked with them about what they did online. Presenting the lowest rates regarding the use of parental controls for blocking, filtering, or tracking content, these adolescents are undoubtedly seen as the family's digital helpers.

Cross-view of the clusters

Low self-control emerges as the most consistent correlate of online aggression, aggravated by the ineffectiveness of external controls in children's lives, both at the informal and formal levels.

All clusters share high levels of emotional deprivation, which is visible in the children's low levels of well-being and self-control as well as (possible) social isolation translated into their search for exciting contacts, attention, visibility, and social acceptance. Children also present an exacerbated sense of online safety and trust in their own skills for dealing with problematic situations despite the victimization experiences. Furthermore, they face a relative social control deficit and poor/inadequate digital supervision from their parents; teachers and professionals whose work is to help children are almost absent. This may be decisive for

the way in which they anticipate and perceive their behaviors to be seen by others, which facilitates the non-internalization of conventional internal controls.

Although the clusters share a male predominance, the gender gap is not as wide as reported in most studies on offline aggression (Kruttschnitt, 2013; Salvatore and Markowitz, 2014).

Mainly composed of adolescents fully engaged in their developmental tasks, clusters 2 and 3 clearly differ from each other. A frequent engagement in aggressive acts and high levels of problematic emotional characteristics, transgressive practices, recognition of others' criticism, and online performances related to communication and participation portrays the individuals in cluster 2 as "omnipotent masters of the digital", who consider they can easily do whatever they want. In cluster 3 (the largest one), occasional aggression seems to be related to relational online peer victimization. Presenting lower vulnerable psychological traits and deviant practices, these individuals are also the most competent regarding their own online protection and privacy.

Individuals from cluster 1 may in the future fall into one of these clusters. The risk of falling into the frequent aggressive practices evidenced by cluster 2 is relatively high, due to their psychological traits and signs of risky behavior as well as to the lack of parental supervision and communication, which are replaced by technological devices.

The analysis confirms that age is a stronger predictor than gender among children who reported online aggression. Not only do the older ones present high levels of risk-taking behaviors, but they also report low levels of adult supervision and communication. The relation between internet uses and engagement in online aggression is not straightforward, suggesting the prevalence of personal and social traits over online access and use.

5 Discussion

As children are going online more, at younger ages, and using more personal and mobile devices (Smahel et al., 2020), a risk aversion narrative has ensued in most European countries, mainly contributing to instill fear in adults and to promote two contradictory attitudes towards children in digital environments: being afraid *for* them, as potential victims of all sorts of online dangers; and being afraid *of* them, when they act as aggressors. Our interdisciplinary and evidence-based approach comes to counter this binary narrative by highlighting the relationship between victimization and aggression in relation to the nature of social mediations.

The explanation of children's online aggression cannot be reduced to the technological opportunities or affordances viewed in isolation, as they are available to all children anywhere and only a minority of them get involved in such conduct, as shown in the EU Kids Online dataset. The children who reported having treated someone else in a hurtful or nasty way in the previous year were a minority (16 %), and among them the ones associated with the role of frequent online aggressor were an even smaller group. The prevalence of online aggression in this extensive European dataset shows that most children do not report involvement as aggressive conduct, neither offline nor online.

In line with the existing literature, results confirm that the probability of online opportunities turning into real aggressive behavior is higher if children do not benefit from adequate supervision and adult or peer pro-social influences when using digital technologies (Goldstein, 2015; Goldsmith and Brewer, 2015). Moreover, a sense of emotional emptiness in the children's relationship with adults becomes particularly relevant among those with high and more problematic engagement in online aggression (cluster 2). The search for affiliation to someone seems to be a powerful driver, whether intentional or not, conscious or not, of both victimization and aggression.

Age seems to explain certain differences among the clusters. In the absence of capable guardians, the success of the first online aggressive conduct takes on a growing expression, and the accumulated experience could strengthen the acceptance and internalization of this path as one that can continue to be developed. The ages of 12–14 emerge as the critical stage of development, a period of turning points marked by the search for affiliation to new social groups, as children broaden their horizons, moving from the closed dependence on the family towards an increasingly autonomous involvement with peers and digital environments. Although the existence of adult reference persons in children's everyday life proves to be decisive, the sense of powerlessness experienced in the communication with adults should not be overestimated: When young people have little confidence that their opinions are respected and taken seriously, feelings of resentment and frustration emerge (Ang, 2015). The value of excitement, the pleasure of risk-taking, the notion of smartness associated with aggression could prevail as expressed in cluster 2. The confrontation with others, following a line of autonomy and exercise of power, prevents the consideration of any external control.

Adolescents may feel more comfortable and secure when seeking emotional rewards or exploring personal identity issues by digital means. One feature relates to this key developmental task that integrates the perception of others, often the stigmatizing view of others, which can be associated with the self-prophecy that must be fulfilled: If children perceive others' representations of them through negative actions (e. g., cheating, stealing, etc.), they might assume online aggression

as the response to fulfilling negative societal expectations of them. Often, being a disembodied user acting anonymously and uninhibitedly facilitates the need to develop core tasks of the developmental stage that the adolescent undergoes.

6 Conclusions

Today's children have never known a world without digital technologies. "Drifting digitally" in and out of aggression, as evidenced mostly by cluster 3, does not mean children necessarily reject conventional values. Instead, children's ease of access to a wide range of negative models in digital environments, frequently disconnected from their real identity and without proper supervision, often ends up leading many of them to act in ways they would not attempt in physical worlds or would find much harder to consider in face-to-face interactions (Staksrud, 2009; Valkenburg and Peter, 2011). This also allows children to become more exposed to and more involved in digital risk-taking actions and harmful communications, not only as aggressor but also as victim or in the dual condition of victim/aggressor. Thus, a critical factor is parental awareness of the preventive and supporting roles of parents as part of their enabling mediation (Livingstone et al., 2017) throughout childhood and adolescence.

By uncovering an emerging global social problem through a multidisciplinary approach and results from a pan-European survey, this research adds social and scientific value, contributing to the expansion of the understanding of children's engagement in online aggression from a European perspective. Although self-reported data have limitations, they provide valuable information on how children place online behaviors in their lives and how they view the adults who are supposedly in charge of their supervision, and their peers.

Findings underscore that more effective prevention policies should address the persistent impact of ineffective parenting responses to children's problematic behaviors. The observed relationship between victimization and aggression suggests the need to offer educational programs and communication tools specifically targeting the critical years of early adolescence, but particularly the early school-age years, with a view to supporting children, parents, and professionals working with them by ensuring that they benefit from learning digital skills and more effective relational strategies.

At the public policy level, online aggression must be considered using an ecological approach, within the complex fluid offline–online continuum cutting across the social contexts in which children grow. Therefore, to face the perceived "digital drift", punitive and judicial responses are not considered the most effec-

tive, and strict criminalization should be avoided. Instead, it is of particular relevance that children and family services improve their evaluation tools, overcoming the limitations of using dichotomized categories of victim versus aggressor when dealing with children with problematic behaviors.

This article began by focusing on aggression, but victimization emerged as a significant variable that deserves to be further explored. Common needs and risks factors emphasize the relationship between the two types of pathways to both online behaviors, which need to be understood within the broader framework of a child's development. Preventive actions aimed at improving interpersonal relationships, especially among peers, and emotional self-regulation skills are effective in reducing both online perpetration and victimization with respect to aggression. Therefore, it is imperative to implement appropriate victim-support intervention and anti-(online)aggression/(cyber)bullying programs to prevent the recurrence of victimization and aggression, particularly the escalation of behavior from victim to aggressor. As proven in this research, "victim" and "aggressor" are often the same child.

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Annex 1: Discrimination measures and contributions.

Variables	Dimension 1: Experiences of aggression/victimization		Dimension 2: Access & skills on the internet	
	Discrimination	Contribution	Discrimination	Contribution
Frequency of aggression in person face-to-face	**0.585**	25.8	0.160	8.8
Frequency of aggression via mobile phone or internet	**0.675**	29.8	0.002	0.1
Frequency of aggression in some other way	**0.587**	25.9	0.053	2.9
Frequency of being treated in a hurtful or nasty way	**0.325**	14.3	0.001	0.1
Frequency of access to the internet by a mobile phone/smartphone	0.004	0.2	**0.434**	23.8
Frequency of access to the internet by a desktop computer, laptop or notebook computer	0.020	0.9	**0.334**	18.4
Time spent on the internet	0.068	3.0	**0.368**	20.2
Skills scale	0.002	0.1	**0.468**	25.7
Total	2.265	100.0	1.820	100.0
Inertia	0.283		0.227	