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Drivers of cyberbullying and cybervictimization during the COVID-19 pandemic. Findings from an online survey during the first lockdown

Fattori chiave del cyberbullismo e della cybervittimizzazione durante la pandemia di COVID-19. Risultati di un sondaggio online durante il primo lockdown

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Abstract. The COVID-19 pandemic has confronted families, and especially children, with significant social and psychological challenges. The lockdown was accompanied by a substantial expansion of digital and social media use and an increased probability of coming into contact with different kinds of online risks. Focusing on cyberbullying, we report on findings from an online survey to investigate the extent to which children aged 10-18 (n = 1.541) experienced cyberbullying and cybervictimization during the first lockdown in Italy and Germany. Looking at the role of different variables through two binary logistic regressions, results indicate that the most consistent predictor in both forms of bullying experiences was children's emotional distress. No statistically significant country differences emerged. Finally, the implications and limitations of this work are discussed.

Keywords: children online, cyberbullying, cybervictimization, COVID-19 pandemic, online risks

Riassunto. La pandemia di COVID-19 ha messo le famiglie, e in particolare i bambini, di fronte a sfide sociali e psicologiche significative. Il lockdown è stato accompagnato da una sostanziale espansione dell'uso dei media digitali e dei social media e da una maggiore probabilità di entrare in contatto con diversi tipi di rischi online. Concentrandoci sul cyberbullismo, riportiamo i risultati di un sondaggio online per indagare in che misura i bambini di età compresa tra 10 e 18 anni (n = 1.541) hanno subito cyberbullismo e cybervittimizzazione durante il lockdown in Italia e Germania. Osservando il ruolo di diverse variabili attraverso due regressioni logistiche binarie, i risultati indicano che il predittore più coerente in entrambe le forme di esperienze di bullismo era il disagio emotivo dei bambini. Non sono emerse differenze statisticamente significative tra i Paesi. Infine, vengono discusse le implicazioni e i limiti di questo lavoro.

1. INTRODUCTION

The COVID-19 pandemic has posed significant challenges to society, particularly to children and adolescents. Families were in a state of emergency for weeks and months. During the lockdown phases, social contacts were limited to the immediate family circle and, beyond that, were only possible online. On the one hand, digital media has offered various opportunities to maintain social contact with other family members, teachers, and peers. On the other hand, it has also raised the probability of coming (unprepared) into contact with all kinds of online risks and interaction risks in particular (Livingstone and Stoilova, 2021). Examples include aggressive behavior towards others (also referred to as 'cyberbullying') such as insults and defamation via various platforms, but also spreading rumors or exclusion from communication.

Still, the question of which factors contribute to children getting bullied or becoming bullies themselves under pandemic-related circumstances is partially explored, and requires further analysis. Growing evidence shows that adolescents' mental health has worsened during the COVID-19 pandemic, e.g., due to stress, anxiety, and powerlessness, which is also often attributed to the increased use of social media, but also to virally distributed content (Nearchou et al., 2020; Ravens-Sieberer et al., 2021a; Thakur, 2020).

In this paper, we aim to explore whether and how episodes of cyberbullying perpetration (i.e., bullying someone else) and cybervictimization (i.e., being a victim of cyberbullying) increased or decreased during the first lockdown of the COVID-19 pandemic and which variables, if any, predicted this change. For this purpose, we rely on findings from an online survey to investigate the extent to which children experienced episodes of online aggression, cyberbullying, and cybervictimization during the first lockdown. We specifically focus on data from the online study "Kids' Digital lives in COVID-19 Times" (KiDiCoTi), which involved 26 research centers in 15 European countries (Austria, Belgium, Croatia, Denmark, France, Germany, Ireland, Italy, Lithuania, Norway, Portugal, Romania, Slovenia, Spain, and Switzerland), and was coordinated by the Joint Research Center (JRC), the European Commission's science and knowledge service. The study, administered to 6.195 children aged 10-18 and 6.195 parents, covers remote schooling (Vuorikari et al., 2020) and the general online experiences during the lockdown (Lobe et al., 2021). While the overall aim of the study is to identify changes in children's online risk experiences during the lockdown, we focus on the possible drivers of particular online risks.

For the empirical analysis, we refer to the Italian and German children's datasets (n = 1.541). Such a comparison is due not only to the researchers' nationality, which helps contextualize data analysis in lived experiences, but also to the way data on cyberbullying and cybervictimization changed before and during the pandemic in both countries. In this regard, data collected between autumn 2017 and summer 2019 through the EU Kids Online project with youth aged 9-17, show that 7% of Italian children reported having bullied someone online, and 10% of them reported having been victims of cyberbullying. As for German children, 12% of them reported having bullied someone online, and 25% of them having been a victim of cyberbullying (Smahel et al., 2020).

While these data picture a situation where both cyberbullying and cybervictimization were more common in Germany than in Italy, it is striking to notice how the situation changed when compared to data collected during the pandemic. In the time between the EU Kids Online latest data collection (Smahel et al., 2020) and the one carried out for the KiDiCoTi project, in fact, the figures on cyberbullying and cybervictimization changed drastically. Indeed, the KiDiCoTi project show that 59% of Italian children reported having been victims of cyberbullying in general at least once, with 50% stating this happened more during the first lockdown; similarly, 58% of German children reported to have ever been victims of cyberbullying, with 51% reporting this happened more during the first lockdown. The same increasing tendency is observed with respect to bullying others: 39% of Italian and 49% of German children reported having ever done it, with 49% of the former and 41% of the latter stating this happened more during the lockdown (Lobe et al., 2021).

Although these are two different studies and no generalizations, nor linear connections between the two datasets can be made, it is striking that the surveyed children reported a significant increase in cyberbullying perpetration and cybervictimization both in general and during the pandemic. This raises the question of which factors have a particularly high influence on the experience of cyberbullying and cybervictimization.

In this paper, we present findings from two binary logistic regression analyses looking for predictors of cyberbullying and cybervictimization; we reflect on them against the background of the extant literature on the topic; and we discuss potential implications and future directions of this work. While we address these questions with respect to two different countries, Germany and Italy, we fully acknowledge that cultural differences in media use across different countries, as well as the public management of the pandemic, matter in explaining these results, but cannot be inferred by referring to our avaible data. Hence, we suggest potential paths of future research to ground our findings into a more nuanced and context-aware comparative approach.

2. LITERATURE REVIEW

2.1 Children's use of online technology during the COVID-19 pandemic

The first cases of COVID-19 in Italy were reported in February 2020. The suspension of school activities - and thus the beginning of the lockdown for students - started on March 5th in Italy. The generalized lockdown was established from March 11th. At the beginning of May, the first lockdown was over and activities and travel resumed, yet school remained closed. School reopening was expected to take place at the beginning of September 2020. The situation was similar in Germany. After the first cases were reported at the end of January 2020, schools were closed from March 13th, and citizens were asked to stay at home. The official lockdown started on March 22nd, 2020, and was accompanied by the closure of recreational facilities, contact restrictions, and thus social distancing. However, compared to Italy, there was no general curfew, and citizens were allowed to leave their house at any time. From May 4th, 2020, public life was gradually brought back to normal. While some schools reopened, others remained with online learning or offered a hybrid model. This partly opaque situation lasted until the summer holidays.

The lockdown and the accompanying school closures led to adolescents spending a lot of time at home and with digital media. Children's media use had massively increased during the lockdown: they reported spending between 6 hours to 7.5 hours online on a regular weekday, of which more than half was dedicated to school activities (Vuorikari et al., 2020). For comparison, according to the EU Kids Online Survey 2020, daily time spent online by children before the pandemic was on average 167 minutes (= 2.8 hours) (Smahel, 2020).

Both duration and media use differed significantly. Concerning the use of digital media for remote schooling, the available data show significant discrepancies (Vuorikari et al., 2020). Digital media provided essential opportunities to learn and stay in touch with others during the lockdown. At the same time, this also increased the likelihood of exposure to different types of online risks (Lobe et al., 2021). The KiDiCoTi project considers different types of risks, such as excessive use, cyberbullying, cyber hate, disinformation, user-generated content risks, exposure to violent, gory content or self-harm practices, and personal data and cybersecurity risks (ibid.).

Cross-country results show that just under half of 10-18-year-olds have had no negative online experiences during the lockdown, whereas one-fifth of respondents reported more negative experiences. Among them, 23% state these were no more frequent than during the period before, and 7% even report fewer experiences. Children from Slovenia (14%), Austria (16%), France (16%) and Switzerland (19%) are the least likely to report increased negative online experiences. The largest share is accounted for by children in Ireland (28%), Spain (25%), Italy (24%) and finally Germany, Portugal and Romania (with 23% each). It is important to note that the data report children's subjective assessments, and what they rate as negative online experiences cannot be identified. The difference between risk and harm should also be clearly pointed out here, since online risks do not necessarily translate into harm (Livingstone, Mascheroni, & Staksrud, 2018).

2.2 Cyberbullying and cybervictimization experiences

Given the shift of social contacts to online interactive spaces, the question arises to what extent an increase in aggressive behavior was observed during the lockdown, which is commonly subsumed under the term 'cyberbullying'. Cyberbullying is one of the central and most studied phenomena in connection with negative online experiences. However, a consensus on the definition, operationalization and measurement of cyberbullying is still lacking (Brochado et al., 2021; Lampert and Donoso, 2012), which is why prevalence figures vary significantly. Most definitions refer to Slonje and Smith (2008), for which cyberbullying is "a new form of aggression […] that occurs through modern technological devices, and specifically mobile phones or the internet" (p. 147).

According to a review by Aboujaoude et al. (2015), approximately 20-40% of children and adolescents have been victims of cyberbullying, with females and sexual minorities being more likely to be victimized than males, and perpetrators of cyberbullying more likely to

be male than female (Aboujaoude et al., 2015). The study also suggests the increased prevalence, in online environments, of the "bully-victim phenomenon", whereby victims of cyberbullying may eventually become retaliating attackers themselves.. Lower prevalence was reported in the recent EU Kids Online Study, of which 14 % of the 9-16-year-olds reported having been treated in a nasty or hurtful way at least a few times in the previous 12 months (Smahel et al., 2020). In 2010, the share was 9% (Livingstone et al., 2011; Görzig, 2011). Broachado and colleagues (2021) measured a prevalence of 3.9% for a 12-month period for Portuguese students in 2014/2015. Moreover, they found a strong correlation between involvement in cyberbullying and negative emotional well-being among the students.

Despite varying prevalence figures, an upward trend can be observed in recent years, which can also be attributed to increased online use, among other things. This, in turn, raises the question of whether intensified online use during lockdown is the central driver of cyberbullying and cybervictimization, or whether there are other factors at stake, which are more likely to be due to the stressful situation during the COVID-19 pandemic or the pandemic itself.

A Canadian study examining the issue of school bullying found fewer cyberbullying incidents during the pandemic than before (Vaillancourt et al., 2021). Common patterns, such as girls being more likely to be victims and boys more likely to be perpetrators, or gender diverse and LGTBQ + students, were also found in the COVID-19 pandemic.

A representative study with 4,418 children and adolescents aged 8-21 by a German health insurance company, conducted in 2020, found that children and adolescents who are dissatisfied with their everyday social situation are particularly at risk for cyberbullying, as this life satisfaction reduces their psychological defenses (Beitzinger et al., 2020). A qualitative analysis of Facebook, Twitter and Instagram posts since the beginning of lockdown shows that many posts include sexting, sexual comments, derogatory comment on pictures, videos of school children fighting or insults (Mkhize and Gopal, 2021).

In addition to whether children and young people are treated meanly or hurtfully by others, the question of how many children themselves behave in such a way towards others is also of interest. Findings from previous studies show a correlation between self-experienced cyberbullying and becoming a perpetrator (Lampert and Donoso, 2012). According to the cross-national results of the KiDiCoTi study, two-thirds of children and young people did not behave in a mean or hurtful way towards others during the lockdown. The most significant shares of children who have acted as cyberbullies are in Germany (45%), Romania and Switzerland (43%). 40% of the children stated that this happened more during the lockdown than before, with the highest shares in Italy (49%), Spain (48%) and Ireland (48%).

2.3 EMOTIONAL DISTRESS AS A SITUATIONAL RISK FACTOR FOR CYBERBULLYING

Pandemics are characterized by uncertainty, ambiguity and loss of control, features likely to trigger stress, including internalizing symptoms (anxiety and depression) and anger (Shanahan et al., 2020). According to Lazarus and Folkman (1984, p. 141), stress can be defined as "specific external and/or internal demands that are appraised as taxing or exceeding the resources of the person". In the case of the COVID-19 pandemic, possible stressors include perceived threat from the virus, confusion, disruptions to daily lives and routines, boredom, duration of quarantine, social isolation, loneliness as well as increased consumption of social media (Brooks et al., 2020; Sprang and Silman, 2013; Mazza et al., 2020; Qiu et al., 2020). Consequently, Yang (2021, p. 138) refers to the COVID-19 pandemic as a "major life stressor". Since childhood and adolescence are sensitive, demanding phases of life per se, associated with biopsychosocial changes and developmental tasks as well as an increased need for social interaction, it can be assumed that young people are particularly susceptible to psychological stress during the lockdown (Ravens-Sieberer et al., 2021b).

Studies on the impact of the pandemic on children's mental health and well-being point to increased levels of stress (e.g., worries, helplessness, and fear) and related issues such as loneliness, anxiety, and depression (Loades et al., 2020; Nearchou et al., 2020). For instance, a Chinese study conducted at the beginning of the pandemic found that almost a quarter (23 %) of second to sixth-graders had depressive symptoms and a fifth (19 %) had anxiety symptoms (Xie et al., 2020). Compared to younger children, adolescents seem to be even more burdened by the pandemic. Among Chinese 12 to 18-year-olds, the prevalence of depressive symptoms, anxiety symptoms, and a combination of both was 44%, 37%, and 31% respectively (Zhou et al., 2020). Independent of age group, further Chinese studies show that 22 % of children and adolescents suffered from depressive symptoms (Duan et al., 2020).

Studies from Western countries, some of which were conducted at a later point of the pandemic, show even

higher prevalence. Building on findings from an interview study concerning psychological distress conducted with 82 participants aged 6-14, Segre et al. (2021) report that 78% of children and adolescents in Milan,Italy had anxiety symptoms and 44% showed significant mood symptoms. In a Canadian study from summer 2020 high percentages of adolescents (N=809) aged 12-18 met clinical cut-offs for depression (51%), anxiety (39%), and post-traumatic stress disorder (45%) (Craig et al., 2022). The impression that individual stress levels have increased over the course of time is confirmed by a longitudinal two-wave nationally representative study from Germany (Ravens-Sieberer et al., 2021a). Compared to the first survey, children's fears and worries, depressive symptoms and psychosomatic complaints (e.g. low spirits, headaches and stomach ache) have intensified significantly, while their perceived quality of life has further deteriorated. Overall, four out of five of the 7-17-year-old children and adolescents surveyed felt stressed by the COVID-19 pandemic. Seven out of ten children reported reduced quality of life.

Feelings of stress can manifest in a wide array of symptoms. According to a cross-national study, Spanish and Italian children aged 3-18 displayed different stress-related symptoms ranging from difficulties in concentrating (77 %), boredom (52 %), irritability (39 %), restlessness (39 %), nervousness (38 %), feelings of loneliness (31 %), uneasiness (30 %), and worries (30 %) (Orgilés et al., 2020). This is in line with results from other international studies, which further identify behavioral disorders, clinginess, inattention, sleeping problems and various psychosomatic complaints as symptoms of COVID-19-related stress (Jiao et al., 2020; Ravens-Sieberer et al., 2021a).

Research also points to a complex relationship between stress and (cyber)bullying. With regard to cyberbullying (i.e. bullying others), a large body of research indicates that perceived stress (including feelings of anger, anxiety and depression) can be a driver of cyberbullying perpetration (Camerini et al., 2020; Geng and Lei, 2021; Patchin and Hinduja, 2011). As an explanatory approach for this relationship, Patchin and Hinduja (2011) draw on the General Strain Theory, which suggests that people who have high levels of stress are more likely to engage in deviant behavior (Agnew, 1992). Specifically, Agnew (1992) assumes that delinquent behaviors can result from three forms of strain: the failure to achieve goals, the removal of positively valued stimuli, and the introduction of negative stimuli. These theoretical considerations can be transferred to the COVID-19 pandemic: for example, social distancing (i. e., not being able to meet friends and family), and the closure of recreational facilities (i. e., not being able to do the things you enjoy) can be understood as the removal of positive-ly valued stimuli, while disturbing news coverage of the virus, curfews or quarantine, and – associated with this – increased family conflicts, can be seen as emerging negatively valued stimuli. In addition, many young people were unable to achieve individual goals, such as completing a year abroad or an internship. In the context of cyberbullying perpetration, studies also identify boredom and the need to make oneself feel better as motivations for such behavior (Varjas et al., 2010). Transferring this to the COVID-19 situation, which is associated with notably higher levels of stress and irritability, it is conceivable that cyberbullying is used to cope with lockdown-related boredom, frustration, and feelings of distress. Besides emotion regulation, another motive for cyberbullying is the achievement of certain goals, such as dominance or power (Gradinger et al., 2012). In a situation such as the lockdown, which naturally involves feelings of powerlessness and helplessness, cyberbullying others might thus serve as a coping mechanism to regain a sense of power and superiority.

With respect to cybervictimization (i.e., being bullied), most studies point to an opposite causal relationship. In this case, stress is seen as a consequence of online victimization. There is convincing evidence that cyberbullying experiences negatively affect individual well-being (Nixon, 2014; Völlink et al., 2013). In this regard, both victims and bully-victims (i.e., adolescents that bully and have been bullied) report "feeling depressed, hurt, lonely, insecure, worried, hopeless, embarrassed, threatened, anxious, frustrated, angry, socially inept and stressed more than non-victims" (for a detailed overview see Völlink et al., 2013, p. 8). Interestingly, being bullied online seems to have more severe consequences when it is accompanied by other psychosocial stressors from everyday life (Staude-Müller et al., 2012). Thus, cybervictimization experiences during the COVID-19 pandemic might lead to even stronger stress reactions than under normal circumstances.

However, few studies also found psychological distress to be a predictor for cybervictimization experiences. According to a meta-analysis of predictors of victimization, the typical cyberbullying victim is characterized by, among other things, high levels of depression, helplessness, stress, or loneliness (Guo, 2016). This is in line with findings from Le and colleagues (2017), who argue that the risk of becoming a cyberbully-victim significantly increases with previous experiences of psychological distress. Assuming that the COVID-19 crisis is associated with higher levels of stress, these findings should be considered when exploring the drivers of cybervictimization.

Against this theoretical and empirical background, our research aims to explore selected predictors of cyber-

bullying and cybervictimization (age, gender, nationality, time spent online, increase in social media use, increase in using instant messaging apps, emotional distress; for cyberbullying the predictor "being bullied" is additionally taken into account, informed by Görzig, 2011), in order to answer the following research questions:

> RQ1: To what extent do socio-demographics, the amount of daily time spent online, the use of social media and instant messaging apps and emotional distress affect cybervictimization during the first COVID-19 lockdown?
>
> RQ2: To what extent do socio-demographics, the amount of daily time spent online, the use of social media and instant messaging apps, emotional distress and previous online victimization affect cyberbullying perpetration during the first COVID-19 lockdown?

3. METHODS

An online survey was administered between June and July 2020 to an unweighted sample of parent-child dyads (specifically, 6.195 parents and 6.195 children) from the 15 participating countries using the VALICON online panel. The survey was divided into two parts: one for parents and the other one for children to be completed separately. Questions investigated the use of digital technology within the household, focusing on educational and leisure activities, ICT-related hopes and worries, benefits and risks of digital media use, with regard to the unprecedented challenges posed by the COVID-19 pandemic. Informed consent was obtained from both parents and children in order to participate in the survey (for more information see Lobe et al., 2020).

For the purpose of this paper, we only focused on answers provided by Italian (N= 1.028) and German (N= 513) children, for a final subsample of 1.541 respondents aged 10-18 (M= 13.9, SD= 2.25), of which 58 % were boys and 42 % girls.

Although more time online is associated with both benefits and risks (Livingstone et al., 2018), for the purpose of this work we are going to focus on the latter. Informed by the above-mentioned literature, we explored experiences where children were either victims of cyberbullying or have cyberbullied someone else to investigate predictors of both occurrences during the first wave of the COVID-19 pandemic.

3.1 Data analysis

Children were asked a series of questions concerning their digital media use within the household, how this changed due to COVID-19, as well as about their positive and negative experiences in this period. Specifically, children were asked whether they had experienced cyberbullying or bullied someone else online during the first lockdown. For this work, we treated these as dependent variables. Two binary logistic regressions were run to investigate possible predictors of being bullied and bullying others online.

Children were asked about their cyberbullying experiences by asking them to mark whether certain online experiences increased, decreased, or stayed the same during the lockdown. In terms of being bullied, children were asked whether nasty or hurtful messages were sent to them; with respect to bullying others, whether they treated someone else in a nasty or hurtful way. For the purpose of our analysis, we dummy-coded both variables with values indicating whether there had been an increase or not in these experiences.

The main independent variables we selected as predictors of being a victim of cyberbullying were: children's gender, age, nationality, time spent online, increase in social media use, increase in instant messaging apps use, and emotional distress. The main independent variables we considered as predictors of bullying others were: children's gender, age, nationality, time spent online, increase in social media use, increase in instant messaging apps use, and emotional distress. For this analysis, we also included being bullied as an independent variable to explore whether being a victim could lead to more aggressive behaviors toward others, as suggested by past research (Görzig, 2011). Table 1 summarizes the variables used for the purpose of our analysis.

Children's demographics were measured by asking them to indicate their gender, age, and nationality (considering in this paper only Italian and German participants).

Time spent online was measured by asking children to indicate how many hours a day they spent using the internet on a typical weekday during the lockdown, by indicating an estimate of the total number of hours. Children's increase in social media and instant messaging apps use was measured by asking them to indicate whether they experienced an increase in time spent doing certain online activities (i.e., "using social media for posting or sharing things", and "using instant messaging apps"). The values were dummy coded to indicate whether there had been an increase or not. Unfortunately, other items regarding the specific platforms and instant messaging apps used by the respondents were not available in the survey.

Emotional distress was measured by asking children to respond to a list of seven statements about their emotional well-being on a scale from 1 to 5 (with 1 being

Table 1. Variables and operationalization.

Variable	Operationalization
Children's demographic	Questions on gender, age, and nationality
Time spent online	Self-reported number of hours spent on a weekday using the internet
Increase in social media use	Self-reported indication of an increase in the time spent using social media
Increase in instant messaging apps use	Self-reported indication of an increase in the time spent using instant messaging apps
Emotional distress	Likert scale, ranging from 1 to 5, used on a list of seven items on emotional wellbeing

"not true at all" and 5 being "very true"). Examples of items were "I feel fearful", "I feel nervous", "I feel tense", "I feel worried", and the like. The seven items were computed into a scale, with high levels of internal consistency (Cronbach's α= .94). For more information on the well-being scale see Lobe et al. (2020).

4. RESULTS

We first report on descriptive statistics about children's media use, emotional well-being, and bullying experiences, to then focus on predictors of cybervictimization and cyberbullying perpetration.

On average, children spent a mean of 6.35 hours a day online (SD= 3.99), of which 3.97 were dedicated to schoolwork (SD= 3.08). No significant differences emerged in time spent online between Italian (M= 6.31, SD= 3.91) and German children (M= 6.41, SD= 4.16), $t(1539)$= .486, p= .184. As for internet use, 57% and 68% of respondents experienced an increase, respectively, in social media and instant messaging apps use. Italian children were found to have experienced such an increase to a higher extent compared to their German peers, both for social media use (62% vs. 46%), $\chi2(1, N = 1334) = 28.55$, p= <.001, and for instant messaging apps (74% vs. 57%), $\chi2(1, N = 1459) = 41.08$, p= <.001.

As for emotional well-being, the mean score for the whole emotional distress scale was 2.58 (SD= 1.09), with Italian children reporting slightly higher scores (M= 2.67, SD= 1.04) compared to their German peers (M= 2.37, SD= 1.15), $t(1416)$= -4.93, p= <.001.

As for bullying experiences, 46% and 46% of children reported an increase in cybervictimization and cyberbul-

lying perpetration. Two binary logistic regressions were run to investigate predictors of both occurrences.

As for cybervictimization (Tab. 1), the logistic regression model was statistically significant $\chi2$ (7, N=572) =139.85, p <.001, explained 29% of the variation in the outcome (Nagelkerke R^2= .291), and correctly classified 73.6 % of cases. The analysis found that children who were more emotionally distressed *Wald's $\chi2$* (1, N=572) = 73.32, p = <.001, increased their use of instant messaging apps during lockdown *Wald's $\chi2$* (1, N=572) = 9.49, p = .002, and younger children *Wald's $\chi2$* (1, N=572) = 5.86, p = .015, were more likely to be bullied during this period. Specifically, the odds ratios suggest that more emotionally vulnerable children were 2.33 times more likely to be victims of cyberbullying, while those who used more instant messaging were 2.14 times, and younger children 0.9 times more likely to be bullied. No country differences emerged, nor heterogeneities with respect to the other variables considered.

With respect to cyberbullying perpetration (Tab. 2), the logistic regression model was statistically significant $\chi2$ (8, N=478) =29297, p <.001, explained 61% of the variation in the outcome (Nagelkerke R^2= .614), and correctly classified 84.9% of cases. The analysis showed that girls *Wald's $\chi2$* (1, N=478) = 6.79, p = .009, more emotionally distressed youth *Wald's $\chi2$* (1, N=478) = 12.33, p = <.001, those whose social media use increased during lockdown *Wald's $\chi2$* (1, N=478) = 5.56, p = .018, and those who have been bullied in this period *Wald's $\chi2$* (1, N=478) = 125.96, p = <.001, were more likely to bully their peers. Specifically, odds ratios show that girls were around 2 times more likely than boys to bully someone online, so were those whose social media use increased during the pandemic; children higher in emotional distress were in turn 1.58 times more likely to bully someone, while children who were bullied were almost 29 times more likely to bully someone else.

No differences emerged with respect to nationality, children's age, instant messaging apps use, or time spent online.

Overall, results show that the most consistent predictor of both forms of bullying was emotional distress, with increase in social media and instant messaging apps being relevant too, although with respect to different bullying experiences. Being a victim of cyberbullying, in turn, highly increases the chances for children to bully their peers, too.

5. DISCUSSION, LIMITATIONS, AND CONCLUSIONS

The COVID-19 pandemic posed an enormous psychosocial challenge to children and adolescents. Digital

Table 2. Logistic regression exploring possible predictors of being bullied online.

	B	S.E.	Wald $\chi^2(df)$	p	O.R.
Children's gender					
Girls	-.366	.198	3.439 (1)	.064	.693
Boys (Ref. Cat.)	0				1
Children's age	-.100	.041	5.860 (1)	.015	.905
Nationality					
Italy	.079	.207	.146 (1)	.702	1.083
Germany (Ref. Cat.)	0				1
Time spent online	.041	.021	3.568 (1)	.059	1.041
Increase in social media use	.436	.243	3.235 (1)	.072	1.547
Increase in instant messaging apps	.765	.248	9.499 (1)	.002	2.148
Emotional distress	.846	.099	73.332 (1)	<.001	2.330
Constant	-2.537	.736	11.883 (1)	<.001	.079

Nagelkerke R^2= .291

Table 3. Logistic regression exploring possible predictors of bullying peers online.

	B	S.E.	Wald $\chi^2(df)$	p	O.R.
Children's gender					
Girls	.757	.290	3.439 (1)	.009	2.132
Boys (Ref. Cat.)	0				1
Children's age	.084	.057	2.186 (1)	.139	1.088
Nationality					
Italy	.103	.288	.129 (1)	.720	1.109
Germany (Ref. Cat.)	0				1
Time spent online	-.009	.029	.103 (1)	.749	.991
Increase in social media use	.800	.339	5.560 (1)	.018	2.226
Increase in instant messaging apps	-.007	.346	.000 (1)	.984	.993
Being bullied	3.365	.300	125.963(1)	<.001	28.921
Emotional distress	.461	.131	12.334 (1)	<.001	1.586
Constant	-5.680	1.111	26.145 (1)	<.001	.003

Nagelkerke R^2= .614

media played one – if not the most – significant role in this situation, as it was the only way for adolescents to participate in schooling and maintain contact with peers and others. Consistent with other studies, the results of the KiDiCoTi study show an extended use of digital media over time, and a higher risk of being treated meanly or hurtfully by others.

We took a closer look at two countries, Italy and Germany, where more than half of the children reported that this had happened more often during the COVID-19 pandemic than before. Underlying this increase, we can discern several changes that have occurred in the daily lives of children and young people. Among them, heavy restrictions, happening both in Germany and Italy, and their consequences, play a central role. The increase in online time is in fact a direct consequence of the increased exposure to (social) media required by the changed ways of accessing education and rela-

tionships with peers. Not only has this placed cognitive stress on children and adolescents, but it has also increased their need to stay connected in order to access relational spaces with teachers, friends and relatives (i.e., grandparents). However, it is, above all, the combination of this exposure to digital worlds and the isolation from everyday social life that affects children's stress levels. Although our study did not take these aspects into account as an integral part of the analysis, we can refer to the qualitative part of our study within national contexts (for Italy, see Zaffaroni & Cino, 2021) to detect these changes.

An important contribution of this work has been to jointly analyze the increase in cyberbullying (i.e., how much children and adolescents have increased this practice) and cybervictimization (by analyzing predictors of being a victim). While this focus receive less attention in the literature, it provides an important way to understand the relationship between cyberbullying being perpetrated and suffered, expanding our knowledge of the assimilative and imitative processes associated with this phenomenon. Focusing on the first part of our findings, the analysis shows that emotional distress is the most prominent factor in predicting exposure to cyberbullying (being a victim of it). Confirming what has been reported in the literature, our findings pinpoint specifically the aggravating role of a psychological condition in increasing the likelihood of being a cyberbullying victim. However, we are unaware of what mechanisms are at play behind it. Interesting future research efforts, in this sense, would include analyzing changes in digital media practices after the pandemic occurred.

Yet, referring to our available data, we hypothesize that greater stress and extensive use of digital media lead to a high risk of cyberbullying. In fact, the use of instant messaging platforms and applications is the second most important predictor of exposure to cyberbullying. Consistent with findings in the literature, instant communication, and its sudden increase in the context of lockdown exposed children and adolescents to new opportunities to encounter unpleasant or offensive messages, as well as derogatory behavior towards them. In this scenario, particularly relevant is the degree to which this increase only concerns instant messaging apps and not social media, where communication takes place in a public or semi-public online context. Direct messaging, which is reported as a frequent means of cybervictimization (Whittaker and Kowalski, 2015), was identified as the site where attacks are perceived as the most nasty and hurtful, since they stem from known sources (i.e. peers). Hence, the increase in cyberbullying via instant messaging might be a result of increased time

spent online. Adding to this hypothesis, it is also likely that the increased use of class chat during the lockdown increased the likelihood of bullying experiences.

Linking this result to our other finding, concerning age as a predictor, we can also refer to the skills possessed by children and adolescents in the use of devices. In fact, with equal amounts of time spent online, the youngest are those who encounter more instances of cyberbullying. One reason for this may be that younger and more inexperienced online users do not know how to cope adequately with mean and hurtful behavior. Taking into account the increased exposure to stress, children used instant messaging already in an amplified state of vulnerability. It is important to note that digital literacy is identified as an important moderator of exposure to online risks, particularly cyberbullying. Tao et al. (2022) point out that high levels of digital literacy prevented children from being a victim of cyberbullying, even in cases of high use of digital media. Our results are consistent with this hypothesis, yet we take into account that these aspects need to be investigated directly with further studies that adopt measures of digital literacy.

Besides, no significant differences emerged with respect to nationality, children's age, or time spent online. This underlines the fact that specific online activities (e.g. using a particular app for specific purposes) are more relevant than the amount of time. While these findings require to be confirmed by subsequent comparative studies, they suggest that the experience of cyberbullying in the lockdown setting was a pervasive experience common to different cultures, as well as comparable from a gender perspective. Our study, at the same time, opens up opportunities to discuss the reasons behind such a stark increase in cyberbullying experiences across Germany and Italy, as described in the introduction. In this respect, Palladino et al. (2017) conducted a study on the perceived severity of cyberbullying among adolescents (aged 12-20, M = 4.49, SD = 1.66) – comparing Italy, Germany, Estonia and Turkey – and pointed out that Italians and Germans tend to evaluate the severity of cyberattacks in terms of anonymity and intentionality: while Italian adolescents feel worse when the attack is orchestrated by a friend, even without intention, German adolescents are more hurt when the attack involves a stranger. Our results, while showing no differences in terms of nationality, show how the use of instant messaging – where the counterpart is often known – increases the chance of being victimised, whereas social media use – which sometimes entails semi-anonymous online settings – increases the chance of cyberbullying perpetration. While our data

cannot fully account for the reasons behind the increase in cyberbullying in Germany and Italy, investigating the relationship between nationality, cultural factors, and the use of specific platforms in future work could extend our understanding of the main differences between countries.

Our second regression sheds light on the predictive aspects of cyberbullying perpetration, producing an interesting picture that broadens our previous discussion in the literature review. One of the most relevant aspects is the relationship between receiving and acting upon cyberbullying: being bullied increases the likelihood of becoming a perpetrator by a factor of 29. Though this phenomenon is well known and has been addressed in the literature, our data indicate that children are even less able to cope with stress caused by bullying experiences under the conditions of lockdown. Such results fit well with the other results of the regression, in particular the increase in online time and emotional distress, thus forming a set of conditions that can be observed more closely. Increased social media use might stimulate higher levels of stress which, in turn, can foster cyberbullying perpetration. Interestingly, our data reveal that girls were more likely to bully others during lockdown, which contrasts with previous research showing that the typical cyberbully is male (Guo, 2016). An explanation might be that girls manifested more internalizing problems during the pandemic (Ravens-Sieberer et al., 2021a), which is known to be a predictor of cyberbullying (Guo, 2016).

Overall, the most consistent predictor in both forms of bullying experiences was emotional distress, which increases the urgency to address possible support approaches and prevention options. Against the background of our findings, we point out at least four needs for action:

1. *Need for support*: The fact that emotional distress was identified as one main predictor of both cyberbullying perpetration and cybervictimization points to children's need for support in dealing with emotional distress – not only as a result of stressful situations, but also as a preventive measure. As a solution, we recommend that caregivers and governments combine their efforts in taking into account effective solutions to address the problem. Ultimately, we suggest that such coordination of resources requires moving beyond individualistic approaches and actions – such as focusing on children alone, as atomized individuals – and opting, instead, for a more systemic approach. For example, children could be offered safe communal spaces in which they could partake in moments for

collective reflection and elaboration of what the pandemic caused to them and their loved ones.

2. *Complex relationship between cyberbullying and stress* (distress not only as a predictor of online victimization, but also as an outcome): Previous research shows that online victimization can lead to high levels of emotional distress. In the context of COVID-19, this is especially worrisome, because children in this case face the challenge to simultaneously cope with lockdown-related distress and distress that results from their cyberbullying experiences. Future studies should reflect on the relationship between cognitive stress measured in lockdown and its relation to cyberbullying, in order to understand whether any causal link may exist.

3. *Lack of (social) coping resources*: When it comes to coping with cyberbullying, research suggests that social support, especially provided by friends, is a crucial part of the coping process. Due to contact restriction during lockdown, children didn't have the opportunity to meet their friends, which in turn has limited relevant social resources and might have led to the use of less functional coping strategies. For these cases, there is a need for further online helplines to which affected adolescents can turn in confidence, both in the event of cybervictimization and in the case of depressive episodes.

4. *Support for younger children*: Younger children who have not been active users of instant messaging apps or social media platforms before the lockdown, have started to use these platforms, as a way to keep in touch with family and friends. Younger children can be seen as very vulnerable because they do not yet have sufficient skills in navigating social media and communication apps. They particularly need to be accompanied and supported in using digital media and coping with undesirable side effects. Since parents were also affected by the stressful situation, educational institutions are of primary responsibility in this respect.

Even though the data provide valuable information on how children and young people have come into contact with the issue of cyberbullying, it is important to bear in mind that the data is based on self-reports. Children and teenagers have very different ideas of what constitutes mean or nasty behavior, and also differ in terms of how affected and vulnerable they are. Furthermore, the data does not allow us to say what kind of cyberbullying experience they had before the lockdown and how this differs from the current experience.

Moreover, the significance of emotional stress is limited, as we cannot say with absolute certainty whether the increased stress level is due to the pandemic or to other circumstances. However, the findings underline very clearly that the higher prevalence figures are primarily due to the special psychosocial conditions during the COVID-19 pandemic. The extent to which this finding is valid can only be determined with further data following the COVID-19 pandemic. Nevertheless, also at this point, there is an urgent need to show children and young people alternative strategies for coping with stressful situations, especially when conventional support facilities are not accessible.

Finally, we are unable to fully grasp these differences by means of the survey, as contextual or political factors were not incorporated. Bearing in mind that the comparative analysis between Italy and Germany is undertaken for reasons of data accessibility, and taking advantage on researchers' expertise on the respective study contexts, we are only able to suggest an interpretative hypothesis to explain the similarity between the two countries, inviting researchers to engage on future studies on this topic.

Further studies should take into account how the results of this study will continue to withstand in further rounds of quarantine, or after the end of the pandemic. At the time of writing, the quarantine has been suspended and has not been implemented – in its original configuration – even after a further increase in cases of COVID-19 during the winter months of 2021. However, the effects on the population, in terms of stress and depression, still persist. Moreover, hybrid forms of restriction remain in place, which may have unforeseen effects on the condition of children and adolescents in both Germany and Italy.

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