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Cyberbullying from a socio-ecological perspective:

A contemporary synthesis of findings from EU Kids Online

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Abstract

Involvement in bullying has been shown to result from a complex interplay between individuals and their wider social environment. Consequently, an approach using Bronfenbrenner's classic socio-ecological theory as a starting point has been successfully applied in the research of bullying. The aim of the present paper was to apply this perspective in the context of cyberbullying research; specifically, to review the findings from data of EU Kids Online, a representative sample of 25,142 internet-using European youth aged 9-16 years. Research outputs on cyberbullying using the EU Kids Online data were accumulated. With the young person at the centre, factors associated with cyberbullying were considered at different levels of the socio-ecological system: the individual, the social environment, and the cultural level. The results for each level were reviewed and synthesised differentiating cyberbullying risk experiences (i.e., victimisation and perpetration) and responses to cyberbullying victimisation (i.e., coping and harm).

Results revealed differential patterns of cyberbullying risk, harm, and coping highlighting particularly vulnerable groups (e.g., being a girl, having psychological difficulties, social disadvantage) as well as resilience factors (e.g., sensation seeking, self-efficacy, internet use, social support). Victimisation and perpetration were shown to often co-occur while some factors were particularly associated with perpetration (e.g., online activities, digital skills, internet ability beliefs). Cyberbullying experiences showed strong associations with offline bullying and other type of risk experiences and behaviours (online and offline). Most of the findings focused on victimisation and factors on the individual level. These findings were largely consistent with previous findings using data on a regional level. However, some unique contributions were made explaining cross-national differences in prevalence by cultural level factors (e.g., attitudes towards equality, crime rates) as well as revealing cultural variation in the associations of individual level factors (e.g., gender, psychological difficulties, self-efficacy).

These findings can be useful for the further development of prevention and intervention strategies. Integrated strategies across different types of risks, offline and online, are suggested while simultaneously targeting these towards specific populations taking into account individual, social and cultural background. Despite some important cultural variations, the findings appear to suggest that the phenomenon of cyberbullying is generally universal. Future research is needed to clarify cultural variations using theoretical driven analyses.

INTRODUCTION

Involvement in bullying has been shown to result from a complex interplay between individuals and their wider social environment. Recognising that human behaviour (such as bullying) has multiple causal factors and multiple outcomes, Swearer and Espelage (2004, 2011) used Bronfenbrenner's ecological systems theory (Bronfenbrenner, 1977; Bronfenbrenner, 1979) as a starting point to put forward a socio-ecological framework of bullying. The framework conceptualises bullying behaviours and experiences as a result of a complex and reciprocal interplay between different levels of a socio-ecological system. In order to understand the complexity of the bullying processes among youths, the socio-ecological framework of bullying argues that bullying should be looked at considering factors linked with the levels of the individual, peers, the family, the school, the community and the culture (Swearer and Espelage, 2011).

In the past decade the phenomenon of *cyberbullying* among youth has led to increasing concerns among psychologists, social workers and policy makers alike while the general public has been alerted to a serious health threat (Centers for Disease Control and Prevention, 2014). Although, research in this area is relatively new, recent reviews have endeavoured to summarise the rapidly growing literature in the field. While it is beyond the scope of this paper to summarise the findings of these reviews, some established findings can be linked to different levels of the socio-ecological system. In relation to the level of the individual, correlates with cyberbullying involvement showed that the relationship with age is non-linear with a peak around 13-15 years. There was mixed evidence with regard to gender, showing no conclusive results or findings in either direction. However, it appears that girls are relatively more involved in cyberbullying when compared to traditional bullying (where they are less involved than boys). Involvement in cyberbullying was associated with various psychological problems, such as, suicidal ideation, depression and associated problems, behavioural problems and substance misuse as well as other offline risks (e.g., problems with the law, being truant at school). Higher internet use was also a risk factor for cyberbullying involvement. Most factors were related to victimisation as well as perpetration of cyberbullying while for those involved in both, victimisation and perpetration (i.e., bully/victims), psychological problems appeared to be amplified. Further, a strong overlap between victimisation and perpetration as well as between face-to-face and cyberbullying was revealed. Prior research also reported on correlates of cyberbullying on a social level (although research examining these factors is less common). Some findings indicate that vulnerable populations (e.g., children and sexual minorities) are more at risk of victimisation.

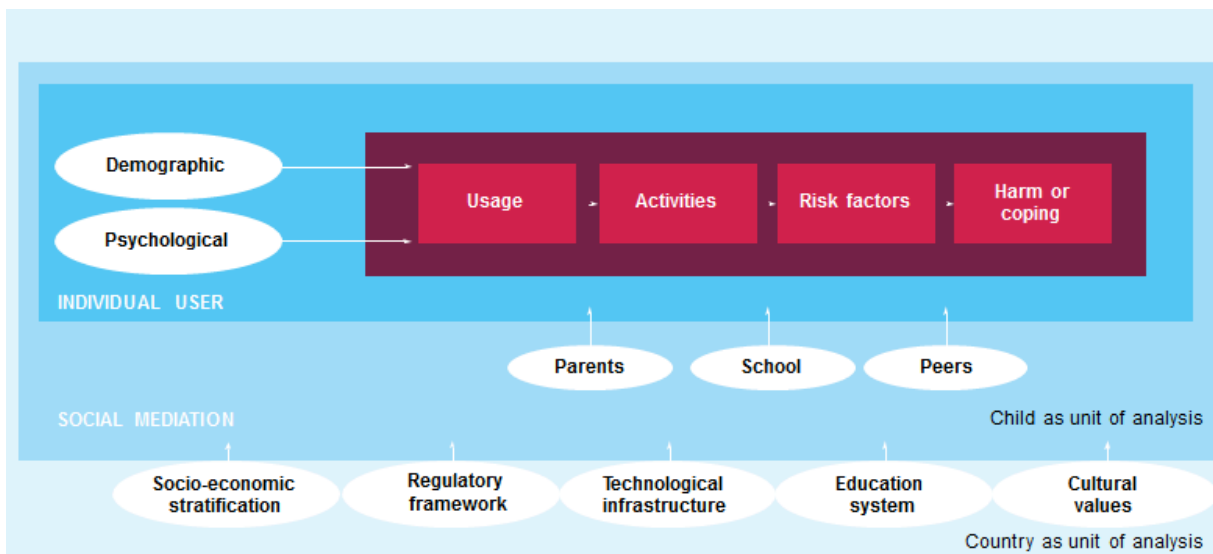
Further, social support by parents or peers as well as a positive school climate showed negative associations with prevalence rates of cyberbullying. Findings linking cyberbullying with a cultural level were particularly scarce. An attempt was made to compare countries within a meta-analysis; However, the lack of results appears to be due to methodological artefacts and small group sizes (Aboujaoude et al., 2015; Kowalski et al., 2014; Livingstone and Smith, 2014; Smith, 2015).

Applying the socio-ecological framework of bullying to cyberbullying, this paper synthesises findings from the cross-national survey data of the EU Kids Online II project. The goal of this project was to enhance the knowledge base about new media use among European youth, with a specific focus on experiences with online risks, including cyberbullying. During 2010, a survey covering a large array of questions regarding internet access, use, activities, risks (including cyberbullying), parental mediation, coping and vulnerability was conducted. A random stratified sample of approximately 1,000 internet-using youths aged 9–16 and one of their parents were interviewed in each of twenty-five European countries¹, yielding a total sample size of 25,142 youths (50% girls). For full details of sampling and procedures, see Livingstone *et al.* (2011b) and Görzig (2012). The EU Kids Online survey data represents a robust comparable evidence base in the European context. Since 2010, a number of scientific outputs, including articles, chapters, reports and presentations have reported findings based on these data and enabled a deeper understanding of the cyberbullying phenomenon. The socio-ecological approach has been successfully applied in the research of bullying. Hence, the aim of this paper was to apply this perspective in the context of *cyberbullying* research, specifically, to the findings from data of EU Kids Online.

The EU Kids Online model explains adolescents' online risks and opportunities within a specifically adapted socio-ecological framework (see Figure 1). Guided by this model, the EU Kids Online survey captured variables on the level of the individual as well as their parents, peers and teachers. In addition, the survey data allows linkage with country level data enabling to additionally capture the *cultural level* of the socio-ecological system by using country as a proxy. Complementing previous research, we consider cyberbullying within three basic types of levels: the individual, social and cultural level.

¹ Austria, Belgium, Bulgaria, Cyprus, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Lithuania, the Netherlands, Norway, Poland, Portugal, Romania, Slovenia, Spain, Sweden, Turkey and the UK.

Figure 1: Explaining risks and opportunities: The EU Kids Online model.



Note: Adapted from Livingstone, *et al.* (2011c) with the authors' permission.

METHODOLOGY

In the following we describe definitions relating to cyberbullying within the framework of EU Kids Online and map the factors that emerged from the survey to the three types of ecological levels focused on in our synthesis. Due to space limitation, a detailed list of items associated with each of the variables will not be provided. However, the reader is encouraged to refer to Livingstone, *et al.* (2011b) or Livingstone, *et al.* (2012a) for a detailed description of key variables used within the EU Kids Online survey.

Defining cyberbullying

Most researchers employ definitions of cyberbullying that are similar to those of face-to-face bullying, namely an act of aggression that is intentional, repetitive, and towards an individual of lower power (cf. Olweus, 1993), but they extend it to electronic forms of contact, specifically mobile phones or the internet (Perren, *et al.*, 2010; Smith, *et al.*, 2008). Within the EU Kids Online survey adolescents received the following description of bullying behaviours:

‘Sometimes children or teenagers say or do hurtful things to someone and this can often be quite a few times on different days over a period of time, for example. This can include: teasing

someone in a way this person does not like; hitting, kicking or pushing someone around; leaving someone out of things.’

Adolescents were asked if in the past 12 months someone acted in this way towards them (referred to as *victim*) or if they had acted that way towards someone else (referred to as *bully*) or both (referred to as *bully/victim*). Further, adolescents were asked to indicate whether this behaviour had occurred face-to-face (offline), by mobile phone, or on the internet. Following Smith, *et al.*'s (2008) definition of cyberbullying, the term *cyberbullying* is used to refer to the incidence of bullying via mobile phone and/or on the internet, while *online bullying* is used to refer to bullying on the internet only. When discussing the phenomena in general the term *cyberbullying* is employed.

Drawing on theories of risk (Aven and Renn, 2009; Breakwell, 2007), the *risk*, *i.e.* the occurrence of an event which is associated with a probability of harm, is differentiated from *harm*, *i.e.* reported actual physical or mental damage. In the survey, follow-up questions for those whose responses identified them as a victim assessed ‘how upset did you feel about it (if at all)’, representing the measure for *intensity of harm*. We refer to the occurrence of *harm* if any level of the intensity of harm (‘a bit upset’ to ‘very upset’) other than ‘not at all upset’ occurred. Furthermore, the survey assessed the *duration of harm* (*i.e.*, ‘how long did you feel upset for’) which allowed the use of a *harm index*, a composite of intensity and duration of harm.

Individual level factors

The individual level factors incorporate all variables that are directly associated with the young person. These consisted of demographic variables such as age and gender as well as psychological factors which included self-efficacy², sensation seeking³, ostracism⁴, and psychological difficulties (further differentiated into emotional problems, peer problems, conduct problems and hyperactivity; Goodman, *et al.*, 1998). Further, the young person’s internet use and activities were examined including the time and the location where the internet was used as well as platforms and devices used for access.

² Adapted from Schwarzer and Jerusalem (1995)

³ Adapted from Stephenson, *et al.* (2003)

⁴ Adapted from Ferris, *et al.* (2008)

The young person's general online activities (e.g., 'used the internet for school work') and risky online activities (e.g. 'sent personal information to someone that I have never met face-to-face') (cf. Livingstone and Helsper, 2007, 2010) were also investigated. Psychological variables connected to internet use and activities were examined, such as excessive internet use as well as whether they found it easier to be themselves online and to talk about different and more private things than they would offline (a concept referred to as 'online persona', Görzig, 2011). Variables further included digital skills and beliefs about internet abilities. Other online risks were also assessed including sending and receiving sexual messages, seeing sexual images, meeting new online contacts (online and offline), personal data misuse and seeing negative user-generated content (NUGC). Offline risk activities such as missing school lessons, getting drunk, having sexual intercourse, getting in trouble at school or with the police (cf. Currie, *et al.*, 2008) were also considered. The individual's type and role of involvement in bullying was also taken into account, such as, involvement in offline bullying and whether offline bullying or cyberbullying occurred as a bully, a victim or a bully/victim.

Finally, factors that are linked with the individual's response to cyberbullying victimisation were evaluated. These included harm from cyberbullying and various responses of the young person in an attempt to cope with the experience. These coping responses can be differentiated into general psychological and/or behavioural responses (e.g. trying to fix the problem, hoping the problem would go away), seeking support (i.e. talking to someone), and responses specific to the internet (e.g. stop using the internet, blocking the person).

All variables contained in the EU Kids Online II data that were linked with the individual level were:

- Demographic variables
 - Age
 - Gender
- Psychological factors
 - Self-efficacy
 - Sensation seeking
 - Ostracism
 - Psychological difficulties
- Internet use and activities
 - Time and location
 - Platforms and devices
 - Online activities
 - Risky online activities
 - Excessive internet use
 - Online persona

- Internet skills
 - Digital skills
 - Beliefs about internet abilities
- Other risk experiences
 - A) Online risks
 - Sending and receiving sexual messages
 - Seeing sexual images
 - Meeting new online contacts (online and offline)
 - Personal data misuse
 - Seeing negative user-generated content (NUGC)
 - B) Offline risks
 - Missing school lessons
 - Getting drunk
 - Having sexual intercourse
 - Getting in trouble at school
 - Getting in trouble with the police
- Offline bullying
- Bullying roles (i.e., victim, bully, bully/victim)
- Coping responses
- Harm

Social level factors

The social level factors involve variables that relate to the young person's social background and social relationships. Social background was reflected by the household's socio-economic status, the use of a minority language at home, and whether the young person belongs to a discriminated against group or is considered to have a disability (e.g. physical, mental health or learning disability). In terms of social relationships factors with regard to the young person's parents or carers, friends or peers, and teachers have been investigated.

Survey responses obtained from parents directly were general worries concerning their child (e.g., child being bullied or contacted by a stranger on the internet) and their awareness about their child's experience of cyberbullying, or something upsetting online. Parents also reported on their use of and their confidence in using the internet. The young person reported on parental awareness of their child's internet activities (i.e. how much they thought their parent(s) knew about what they do on the internet).

Youths were also asked about mediation of their internet use, differentiated into five main types of mediation: active mediation of internet safety, active mediation of internet use, restrictive mediation, parental monitoring, and technical mediation. Lastly, it was looked at

who provided or was sought out for support (i.e. who the young person talked to) upon cyber-victimisation or after a bothering incident.

All variables contained in the EU Kids Online II data that were linked with the social level were:

- Social background
 - Socio-economic status
 - Use of a minority language at home
 - Member of a discriminated against group
 - Considered to have a disability (e.g. physical, mental health or learning disability)
- Parental factors
 - General worries concerning their child
 - Awareness about their child's experience of cyberbullying
 - Awareness about their child's experience of something upsetting online
 - Awareness of their child's internet activities (reported by the young person)
 - Use of the internet
 - Confidence in using the internet
- Mediation of internet use
 - Active mediation of internet safety
 - Active mediation of internet use
 - Restrictive mediation
 - Parental monitoring
 - Technical mediation
- Social support (who the young person talked to)
 - Upon cyber-victimisation
 - After a bothering incident

Cultural level factors

The cultural level comprises abstract influences such as economic, social, educational, legal or political systems which can elicit indirect influences upon individuals and other levels of the ecological system they are a part of (Bronfenbrenner, 1977). Variables reviewed at this level are the country variables as well as differences among other variables in their association with cyberbullying shown across countries. Further, variables that are aggregated at the country level and census or other publicly available data that have been linked with the EU Kids Online data were considered. Given that most variables emerged via data linkage or were aggregates of variables, there was no pre-existing list of variables to be examined directly from EU Kids Online II data for the cultural level.

Research synthesis procedure

This work is based on existing academic outputs (e.g., scientific articles, presentations on conferences, or book chapters available in January 2015) which utilized data on cyber/bullying from the EU Kids Online project and were written in English. These outputs were obtained using academic search databases. In addition, the members of the EU Kids Online network were contacted via their mailing list to gain information about existing relevant outputs. Outputs were coded applying two coding types with non-exclusive categories. The first type of coding indicated whether the output examined the individual, social, or cultural level and whether any interaction between variables across levels was assessed (all four of these could be present). The second type of coding indicated which specific factors (which have been described above) were present for each of the levels. For the individual level, nine codes were used (i.e., demographics, psychological factors, internet use and activities, internet skills, other risk experiences and behaviours, offline bullying, bullying roles, coping responses, and harm). For the social level, five codes were used (i.e., social background, parental use and activities, parental awareness, mediation of internet use, and social support). For the cultural level, we used four codes (i.e., country level aggregates, policy regulations, national statistics, cultural norms and attitudes). After the coding process, findings for each code and all three levels were reviewed and synthesised, that is, findings were amalgamated and combined in coherent form, and specific findings across all levels and factors were described in detail in the following text.

RESEARCH OUTPUTS ON CYBERBULLYING FROM EU KIDS ONLINE

In the following section, the findings related to each investigated level of the social-ecological framework (i.e., individual, social, cultural) will be presented. For better clarity, we list in Table 1 factors by socio-ecological level for which research outputs from EU Kids Online data have demonstrated an association with cyberbullying.. However, it must be noted that more complex patterns of findings are reported in the corresponding result sections of this paper and that unlisted factors do not necessarily demonstrate a lack of association but might rather show a lack of research findings concerning those factors. Hence, the inclined reader is asked to exercise caution when using the table as a stand-alone output of results. A more detailed discussion of the main findings and conclusions follows below.

Table 1: Factors associated with cyberbullying in research of EU Kids Online data by socio-ecological level.

Level	Victimisation	Perpetration	Harm
Individual	Gender (girls)		Gender (girls)
	Age (older)	Age (older)	
	Daily internet use		Daily internet use (-)
	Time spent online	Time spent online ^a	
	Platforms (SNS, IM)	Platforms (SNS) ^a	Platforms (SNS, IM)
		Risky online activities ^a	
		Internet ability beliefs ^a	
		'Online persona' ^a	
		Excessive internet use	
	Data misuse		
	Viewing web content with suicide and self-harm	Viewing web content with self-harm	
		Offline risks	
	Offline victimisation	Offline bullying	Offline victimisation (-)
Cyberbullying	Cybervictimisation		
Psychological difficulties	Psychological difficulties	Psychological difficulties	
Self-efficacy	Self-efficacy	Self-efficacy (-)	
Sensation seeking	Sensation seeking	Sensation seeking (-)	
Ostracism			
Social	Socio-economic status (lower)	Socio-economic status (higher)	Socio-economic status (lower)
	Minority language spoken at home	Minority language spoken at home (-)	Minority language spoken at home
	Member of a discriminated against group	Member of a discriminated against group	Member of a discriminated against group
	Disability present	Disability present	Disability present
	Parental worries		Parental worries
	Parental internet use		Parental internet use (-)
	<i>Parental mediation:</i>		<i>Parental mediation:</i>
	Restrictive (-)		Restrictive
			Internet safety
			Internet use (-)
		Technical	
Cultural	<i>Cross-country variation in associations were shown for:</i>	<i>Cross-country variation in associations were shown for:</i>	<i>Country clusters : 'high use, high risk'(-)</i>
	Age		
	Gender		
	Psychological difficulties		
	Self-efficacy		
	Time spent online		
	Risky online activities	Risky online activities ^a	
	Cyberbullying	Cybervictimisation	
	<i>Association with a country's prevalence rate were shown for country aggregates of:</i>	<i>Association with a country's prevalence rate were shown for country aggregates of:</i>	
	Cyberbullying	Cybervictimisation	
	Attitudes towards equality (-)		
Religiosity (-)			
Crime rates			
Unnatural child deaths			
Mobile phone penetration			

Notes: If not indicated otherwise the direction of association is positive and the reference group consists of not involved youth.

(-) indicates negative associations. ^a indicates factors for which the reference group was offline bullying.

The absence of listed factors either indicates that there was no research output or no association has been found. More complex patterns of factors and factors with ambivalent research results are not included in the table. Please refer to the corresponding paper sections for details.

Individual level

This subsection is divided into three parts. It outlines the prevalence of and factors connected to 1) the experience of cyberbullying (risk) and 2) the responses to cyberbullying victimisation (harm and coping), followed by 3) an outline of similar and differential patterns for risk and harm and linking those further with particular coping responses.

Experiencing Cyberbullying

Demographic factor. Overall, 6% of respondents indicated to be a victim of online bullying while 3% indicated to have bullied others online (Livingstone, *et al.*, 2011c). Both, gender and age were associated with the risk of being involved in cyberbullying. Girls and older adolescents reported being cyberbullied more often than boys or younger youth (Livingstone, *et al.*, 2011c; Vandoninck, *et al.*, 2012; Lampert and Donoso, 2012; Laurinavičius, *et al.*, 2012; Green and Brady, 2013). Further, the gender differences prevalent for offline bullying (more boys) disappear and no overall gender differences occurred in youth reports of having bullied others online (Görzig, 2011; Lampert and Donoso, 2012). Bullying others online or per mobile phone increased slightly with age (Lampert and Donoso, 2012; Livingstone, *et al.*, 2011c).

Psychological factors. Generally, both cyberbullying victimisation as well as perpetration showed a positive relation with psychological difficulties, self-efficacy and sensation seeking (Lampert and Donoso, 2012; Laurinavičius, *et al.*, 2012). Compared to those not involved in bullying, those who were cybervictims but not bullies showed higher sensation seeking, ostracism and psychological difficulties. Those who were cyberbullies but not victims also showed higher sensation seeking and psychological difficulties but not ostracism. Those who were cyberbully/victims showed higher sensation seeking, ostracism and psychological difficulties. Online bully/victims showed higher psychological difficulties than those who were online bullies but not victims. Online bullies or bully/victims were higher in sensation seeking than online victims and online victims showed higher ostracism than online bullies (Görzig, 2011/2014; Hasebrink, *et al.*, 2011). Finally, being cyberbullied via a mobile as opposed to a stationary device was associated with higher sensation seeking and psychological difficulties (Görzig and Frumkin, 2013).

Internet use and activities. The odds of being bullied online increased for those youth who use the internet daily as opposed to those who do not (Staksrud, *et al.*, 2013; Stald and Ólafsson, 2012) and with increasing average time spent online each day (Staksrud, *et al.*, 2013; Laurinavičius, *et al.*, 2012). Those who exclusively bullied others offline as opposed to those who bullied others online and/or by mobile phone spent less time online (Görzig, 2011; Görzig and Ólafsson, 2013). While one study showed that being bullied online was associated with internet use in the child's own bedroom (Stald and Ólafsson, 2012), another found that private access to the internet failed to differentiate between cyberbullies and face-to-face bullies (Görzig and Ólafsson, 2013).

Youth were mostly cyberbullied on social networking sites (SNS) and by instant messaging (IM) and the least on gaming sites or chatrooms (Livingstone, *et al.*, 2011c). About half of those bullied online encountered this on SNS and by IM. Moreover, youth with an SNS profile were twice as likely to be bullied online independent of age, gender, time spent online, and daily use of the internet (Staksrud, *et al.*, 2013) and youth involved in online bullying were more likely to have an SNS than those involved in offline bullying only (Görzig, 2011). Furthermore, having an SNS profile increased the likelihood of being a cyber- as opposed to an offline only bully particularly among girls (Görzig and Ólafsson, 2013). Lastly, adolescents who had been victims of cyberbullying and used a mobile device to go online were more likely to have been bullied via SNS and IM than those who did not use mobile devices (Görzig and Frumkin, 2013).

Internet skills. When compared to face-to-face bullies, cyberbullies showed higher beliefs about their internet abilities, found it easier to be themselves online as well as to talk about different and more private things than they would offline (Görzig and Ólafsson, 2013; Görzig, 2011)..

Risk experiences and behaviours. The experience of cyberbullying has been linked with the experience of other online risks although effect sizes were small (Galács and Ságvári, 2012). There was a small but significant association of excessive internet use with bullying others online (Smahel and Blinka, 2012). Youth bullied online were more likely to experience misuse of personal data than those who have not been bullied (Kupiainen, *et al.*, 2012). When compared to those not involved in cyberbullying, viewing of web-content containing suicide was higher for cybervictims and cyberbully/victims but not for cyberbullies. Viewing of web-content with self-harm was higher for all cyberbullying roles but especially for cyberbully/victims. None of the relationships between cyberbullying role and viewing of

suicide-related web-content was shown to be mediated by psychological problems (Görzig, 2014). Cyberbullying was also linked with offline risks. A confirmatory factor analysis showed that all online and offline risk experiences of 11-16 year olds in the EU Kids Online sample loaded significantly on a shared general risk factor (Görzig and Livingstone, 2014). Cyberbullies could be differentiated from offline bullies by generally engaging in more risky online activities but not by their engagement in risky offline activities.

Offline bullying. Fifty six percent of online bullies said they had bullied others face-to-face and 55% of online victims also reported to be victims of face-to-face bullying (Hasebrink, *et al.*, 2011). Among other predictors, being bullied offline was the strongest predictor of online bullying (Laurinavičius, *et al.*, 2012). Upon investigating various links between the experience of offline risks, offline bullying and offline victimisation with cyberbullying and cyberbullying victimisation, the largest associations existed between offline bullying and cyberbullying and between offline victimisation and cyberbullying victimisation (Vazsonyi, *et al.*, 2012).

Bullying roles. Bullying and being bullied also tended to co-occur (Görzig, 2011; Lampert and Donoso, 2012; Hasebrink, *et al.*, 2011). Around 60% of those who bully have been bullied by others (either online or offline). However, of those who have bullied others offline, only 10% were bullied online while of those who have bullied others online, (only) 18% have been bullied offline. Hence, bullying and being bullied by others mostly occurred through similar modes - either online or offline. Among those who did not bully others, being bullied was relatively rare (Görzig, 2011; Hasebrink, *et al.*, 2011). Further, regression analyses controlling for socio-demographic variables and psychological variables showed that being a cyberbully was the strongest predictor for being a cybervictim and vice versa (Lampert and Donoso, 2012).

Responding to cyberbullying

Coping responses. There are a number of ways to react to or cope with cyberbullying victimisation. Talking to someone was overall the most prevalent strategy. In terms of responses specific to the internet, youth most often blocked the person and deleted hurtful messages. Less frequently, youth stopped using the internet or changed settings. The least employed strategy was to report the problem. With regard to more general psychological and/or behavioural responses, the most common strategy was trying to fix the problem

followed by hoping that the problem would go away, and a few felt a bit guilty about what went wrong. Regarding the efficiency of the coping strategies, blocking the sender was evaluated as the most helpful strategy, followed by stopping to use the internet and deleting the message. Most victims used a combination of strategies (Livingstone, *et al.*, 2011c; D'Haenens, *et al.*, 2013; Vandoninck, *et al.*, 2013).

Some individual level factors were connected with the choice of specific coping strategies. Girls were more likely to talk to someone about the experience, more prone to try to fix the problem, yet they more often hoped that the problem would go away and less often reported it than boys (Vandoninck, *et al.*, 2012; Livingstone, *et al.*, 2011d; D'Haenens, *et al.*, 2013; Vandoninck, *et al.*, 2013; Cerna, *et al.*, 2015). Younger victims less frequently blocked the sender, changed the settings, or tried to fix the problem and more often stopped using the internet. Nevertheless, controlling for other variables these associations with age and gender tended to change or disappear suggesting that some coping responses are conditional upon other factors (D'Haenens, *et al.*, 2013; Vandoninck, *et al.*, 2012; Vandoninck, *et al.*, 2013).

Coping was also associated with psychological factors. Overall, youth with psychological difficulties were more likely to react in a passive manner, i.e. they were more likely to stop using the internet and to hope that the problem would go away. They were less likely to talk about their victimisation. Specifically, (a) higher emotional problems were associated with hoping that the problem would go away, (b) lower conduct problems were connected with trying to fix the problem, (c) higher peer problems with trying to fix the problem and stopping use of the internet and (d) lower peer problems were linked with support seeking. Furthermore, those with lower sensation seeking more often talked to someone about the experience. Those with lower self-efficacy were more likely to stop using the internet and to delete the message, while those higher in self-efficacy were more likely to try to fix the problem, seek support and to change their contact settings but less likely to hope the problem would disappear. The more digital skills were reported, the more likely coping strategies specific to the internet were employed (deleting messages and blocking senders). The fewer activities adolescents reported, the more likely they were to talk to somebody or to stop using the internet (D'Haenens, *et al.*, 2013; Vandoninck, *et al.*, 2012; Vandoninck, *et al.*, 2013).

Coping responses were also associated with being a bully/victim, both online and offline. Bully/victims were more likely to feel guilty, try to get back at the other person, and less likely to try to fix the problem than those who were victims only (Görzig, 2011; Hasebrink, *et al.*, 2011). Finally, the higher the intensity of harm victims reported, the more likely each of the

strategies was employed (Cerna, *et al.*, 2015.; Vandoninck, *et al.*, 2012; Vandoninck, *et al.*, 2013).

Harm. Among the surveyed online risks within EU Kids Online, cyberbullying was found to be the most harmful experience. About one third of online victims reported being ‘very upset’ by the incident while only half of that reported being ‘not at all upset’. Most youth (62%) got over it straight away; however around 40% continued feeling upset for a few days or longer (Livingstone, *et al.* 2011c; Green and Brady, 2013).

While some suggested that there is just a slight difference between 87% girls and 82% boys who found bullying at least ‘a bit’ upsetting (Livingstone, *et al.*, 2013), others indicated a larger difference in terms of being ‘very upset’, reported by 37% bullied girls in contrast with 23% boys (Livingstone, *et al.*, 2011c). The latter was supported by girls being more likely to indicate being upset at all than boys (Livingstone, *et al.*, 2011d) and the intensity of harm being higher among girls than boys (D’Haenens, *et al.*, 2013; Vandoninck, *et al.*, 2012; Vandoninck, *et al.*, 2013). The relation of harm with age showed a mixed pattern. While the youngest in the sample (9-10 year olds) reported a lower proportion of those being ‘not upset at all’ (12%) as opposed to the oldest in the sample (15-16 year olds; 17% ‘not at all upset’), the youngest also showed a lower proportion of being ‘very upset’ (30%) as opposed to the oldest (34%) (Livingstone, *et al.*, 2011c).

Unsurprisingly, depending on the measurement of harm some authors found that older victims experienced more harm (Vandoninck, *et al.*, 2012; Vandoninck, *et al.*, 2013), while others found the opposite (Livingstone, *et al.*, 2011a), and some no significant relationship at all (Laurinavičius, *et al.*, 2012). Moreover, those higher in psychological difficulties, lower in sensation seeking and with lower self-efficacy reported more harm (D’Haenens, *et al.*, 2013; Laurinavičius, *et al.*, 2012; Livingstone, *et al.*, 2011a; Vandoninck, *et al.*, 2012; Vandoninck, *et al.*, 2013). However, some found that among victims aged 9-10, those with higher self-efficacy reported more intense harm (D’Haenens, *et al.*, 2013) while others found no relationship between self-efficacy and harm when controlling for other factors (Laurinavičius, *et al.*, 2012).

Harm was also associated with lower use of the internet (Livingstone, *et al.*, 2011a), although this disappeared when controlling for other factors (Laurinavičius, *et al.*, 2012). A link for

harm with online activities (D'Haenens, *et al.*, 2013) or digital literacy⁵ (Vandoninck, *et al.*, 2013) could not be found. However, harm was connected with platforms and devices through which cyberbullying occurred. Being bullied via IM was found to be most harmful (Staksrud, *et al.*, 2013) and harm was higher upon being cyberbullied on a mobile device. This effect was mediated by cyberbullying occurring via IM or SNS (Görzig and Frumkin, 2013). Those who had been bullied offline as well as those who had experienced less harm upon receiving sexual messages were less likely to experience harm from being bullied online (Laurinavičius, *et al.*, 2012).

Patterns of cyberbullying experiences and responses

The risk of experiencing cyberbullying and the responses to this experience show associations with an abundance of variables on the individual level as well as with interactions between those variables. This complex pattern of associations as presented above might be an indication that the variables on this level are perhaps the most important or else that the individual level is the one receiving the most attention by researchers.

Some findings are particularly worth mentioning. Cyberbullying victimisation as well as perpetration were strongly linked to offline bullying victimisation and/or perpetration. Moreover, the roles of involvement in cyberbullying (i.e., bullies, victims and bully/victims) are to be differentiated in terms of their characteristics, behaviours and responses.

While some variables on the individual level show an equivalent relationship with risk and with harm, for others the relationship to harm is the inverse of their relationship to risk. Some show further associations with particular coping responses. There is generally mixed evidence with regard to age. While older youth are more likely to be cyberbullying victims as well as cyberbullies, upon victimisation younger victims were likely to stop using the internet while older victims were more likely to change their settings or fix the problem. With regard to harm, the association with age depends on its measurement.

Some factors were equally connected to a higher occurrence of the risk of being victimised and a higher likelihood of being upset by the incident; i.e., higher risk also meant higher harm. Among those factors were gender (girls), higher psychological difficulties and use of

⁵ Digital literacy was assessed by a composite of the variables digital skills and online activities.

SNS or IM. Upon being victimised girls were more likely to talk to someone while those with higher psychological difficulties were more likely to respond in a passive manner.

Other factors were connected to a higher risk but less harm. Those factors included higher internet use, sensation seeking and self-efficacy, as well as being a victim of offline bullying. Those higher in self-efficacy were also prone to react to victimisation by trying to fix the problem. Higher digital skills or ability beliefs were associated with a higher risk but also with more internet specific coping strategies. Generally, the more harm was experienced by adolescents the more coping strategies were employed.

Social level

Social background. Generally, the risk of being involved in either online or offline bullying slightly increased with higher levels of socio-economic status (SES), although differences were small (Livingstone, *et al.*, 2011c). However, among youth who were involved in online bullying, those with a higher SES were more often involved as a bully, while those with a lower SES were more often involved as victims (Görzig, 2011). Young people from lower SES families also indicated more and a higher intensity of harm than those from a higher SES background. Lower level of SES was connected with a less likely occurrence of some coping responses, specifically changing internet settings, responding by deleting a message or trying to fix the problem (Livingstone, *et al.*, 2011c; Vandoninck, *et al.*, 2012; D’Haenens, *et al.*, 2013; Vandoninck, *et al.*, 2013). Furthermore, youth from families which used minority languages at home, belonged to a discriminated against group or were classified as being disabled showed higher experiences of being bullied online as well as subsequent harm. Youth from families which used minority languages reported bullying others online less often while those classified as being disabled bullied others online slightly more often. Moreover, youth more often sought support upon being victimised if they belonged to a discriminated against group or spoke a minority language at home (Livingstone, *et al.*, 2011a).

Parental awareness. Among the most prevalent parental worries concerning their child was that their child could be bullied (Livingstone, *et al.*, 2012b). Children of parents who worried that their child might be contacted by a stranger or see inappropriate material online also showed higher incidences of being bullied online and subsequent harm. Further, higher incidences of being bullied online and subsequent harm were associated with a parental perception about their child experiencing something upsetting online in general (Livingstone,

et al., 2011a). Overall, 6% of both parents and children reported that the youth had been bullied online. However, there were large discrepancies between parental and youth's report of the young person's victimisation.

Among youth who reported being bullied online, just about one third of their parents (29%) were aware of their child's victimisation while more than half (56%) reported that their child was not bullied online, and 15% answered 'don't know' in this matter. This discrepancy did not only concern victimized youth. For example, 8% parents of non-victimized children thought their child had been bullied online. Parents with a higher SES background showed a higher awareness about their child's victimisation. Parents also knew about the victimisation more often if a victim was a girl and was in the 'mid-age' group (i.e. 11-14 years) (Green and Brady, 2013; O'Neill and Dinh, 2012; Livingstone, *et al.*, 2011c).

Parental use and activities. Children of parents who did not use the internet were less likely to be victims of online bullying than was generally the case. However, these children also more likely reported harm when they had been victimised online (Livingstone, *et al.*, 2011a). In addition, children of parents who were using the internet less frequently were less likely to hope that the problem would go away. They also more likely stopped using the internet after the victimisation and more likely reported the problem online (Vandoninck, *et al.*, 2013).

Mediation of internet use. A lot of attention has been given to parental mediation strategies. Restrictive mediation was connected to lower online risks including cyberbullying (Duerager and Livingstone, 2012). However, more intense harm was reported by children with parents who mediated their internet safety, restricted their internet use, used technical mediation, and who were less active in mediating internet use (D'Haenens, *et al.*, 2013). Parental mediation of internet use increased the odds of victims actively trying to fix the problem but it decreased the odds of deleting the messages and blocking the sender. Parental mediation of internet safety was connected to both active and passive responses, as it increased the odds of talking to somebody and blocking the sender, but also of hoping that the problem would go away. Parental restrictive mediation lowered the odds of hoping that the problem would go away, but it increased the odds of changing the settings. Children whose parents applied technical mediation less likely deleted the messages, changed their setting, and more likely stopped using internet. On the other hand, they more often talked about the experience and reported the problem online. Parental monitoring showed the opposite effect in that it increased the odds of deleting the messages but decreased the odds of talking to someone about the experience. Peer mediation took place among those who were also more likely to

talk to their peers about their victimisation. Further, while mediation by peers has been associated with higher odds of deleting messages or changing setting as coping responses, mediation by teachers had the opposite association with these two coping responses (D'Haenens, *et al.*, 2013; Vandoninck, *et al.*, 2013; Cerna, *et al.*, 2015).

Social support. Studies also examined to whom the young person talked. Generally, upon being bullied online, a young person was most likely to have talked to their parents and peers and less likely to a sibling, another trusted adult, a teacher or someone else whose job it is to help children (Livingstone, *et al.*, 2011c). Young people who perceived their parents to be more aware of their internet activities were more likely to have talked to their parents when having been bullied online. Youth from families which used minority languages at home were more likely to seek support; however, this was due to those youth being more likely to talk to their parents but not more likely to talk to any of the other groups. Furthermore, a general tendency to talk to peers about bothersome experiences was associated with higher odds of seeking support from peers after online victimisation, but lower odds of talking to parents about online victimisation. Younger victims were more likely to talk to parents or siblings and less likely to peers, while older victims were less likely to talk to teachers. Girls were more likely to talk to friends and were almost twice as likely as boys to talk to both parents and peers than to no one, even when accounting for other factors (Cerna, *et al.*, 2015; Livingstone, *et al.*, 2011c).

The importance of social-level factors in general was demonstrated via associations with youth's risk experiences and responses to victimisation. In terms of social background, there was generally an association of social disadvantage (e.g., low SES, being from a discriminated against group) with the experience of cyberbullying victimisation as well as subsequent harm. A higher incidence of risk and harm was generally associated with higher parental worries or awareness about their child's internet use, risk and harm. However, a large proportion of parents remain unaware of their child's risk experience. Parental awareness varies with socio-demographic factors, of which some are associated with a higher likelihood of the risk (e.g., girls, low SES). Some parental behaviour was simultaneously associated with a lower occurrence of the risk of cyberbullying victimisation and a higher occurrence of subsequent harm. This inverse relationship of risk and harm was found for children of parents who did not use the internet and those who applied restrictive mediation strategies. Youth also showed differential patterns of coping responses in association with SES, factors associated with social disadvantage, frequency of parental internet use, and mediation by parents, peers

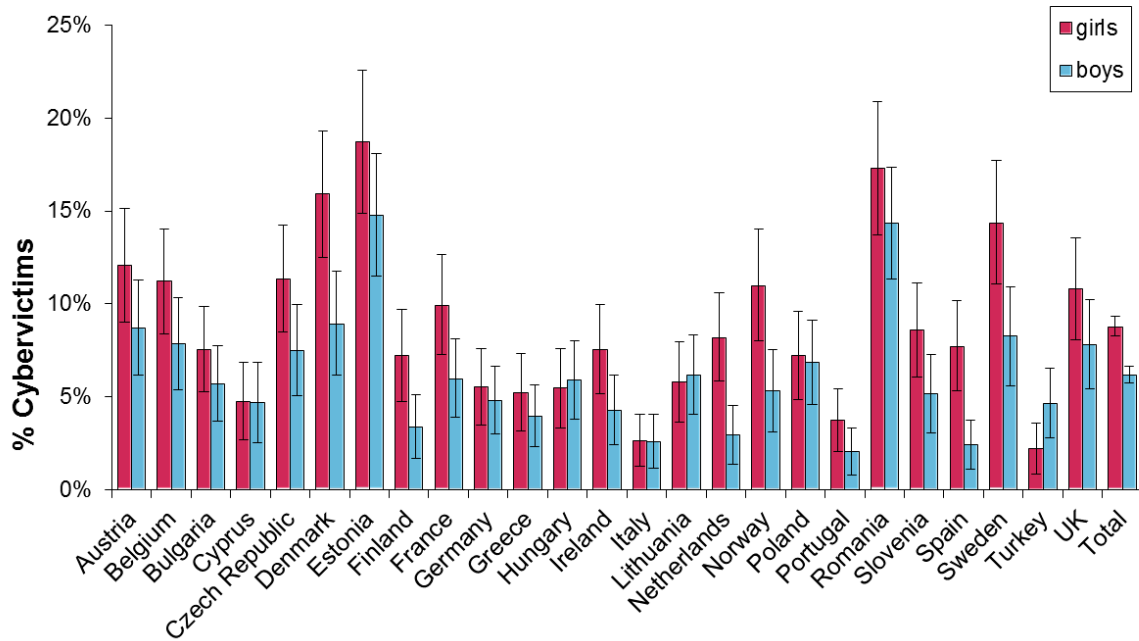
and teachers. Moreover, there have been notable differences in whom youth sought support from when being bullied online.

Cultural level

Cross-national differences in prevalence. The proportions of youth who have been involved in cyberbullying vary across countries (Livingstone, *et al.*, 2011c; Görzig, 2013; Lobe, *et al.*, 2011; Görzig and Ólafsson, 2013; Görzig, 2011; Lampert and Donoso, 2012). The odds of cyberbullying victimisation vary significantly across countries. Seven percent (7%) of the variance in cyberbullying victimisation can be explained by aspects located at the country level (Görzig, 2013). In terms of harm, in most countries the proportion who indicated to be upset by the experience out of those who have been bullied online varies between 70% and 90% - while Finland and Bulgaria have shown to be exceptions with less than 60% upset upon victimisation (Lobe, *et al.*, 2011).

Cross-national differences in associations. Country differences were also found in the associations of variables with cyberbullying. While in most countries more girls than boys experienced cyberbullying victimisation, this difference was not always statistically significant or prevalent for all countries (see Figure 2 – Görzig, 2013). Logistic regression in each of the 25 countries in the sample found that in Spain, Finland and Lithuania, the child's gender (i.e. girls) is the most relevant factor among others predicting online bullying victimisation. (Higher) internet usage was the most important predictor in Greece, Hungary, Italy and Slovenia. Risky online activities were the most relevant predictor in Bulgaria, Denmark, Poland, Portugal and Sweden (Lobe, *et al.*, 2011). Further, risky online activities showed the strongest relationships with cyberbullying in the Netherlands and Bulgaria and the weakest in Romania and the UK. Generally, risky online activities were more strongly related to cyberbullying in countries with fewer cyberbullies (Görzig and Ólafsson, 2013). Among cyberbully/victims the odds that they had been bullied via a mobile device differed across countries (Görzig and Frumkin, 2013).

Figure 2: Percentage cyberbullying victims by country and gender



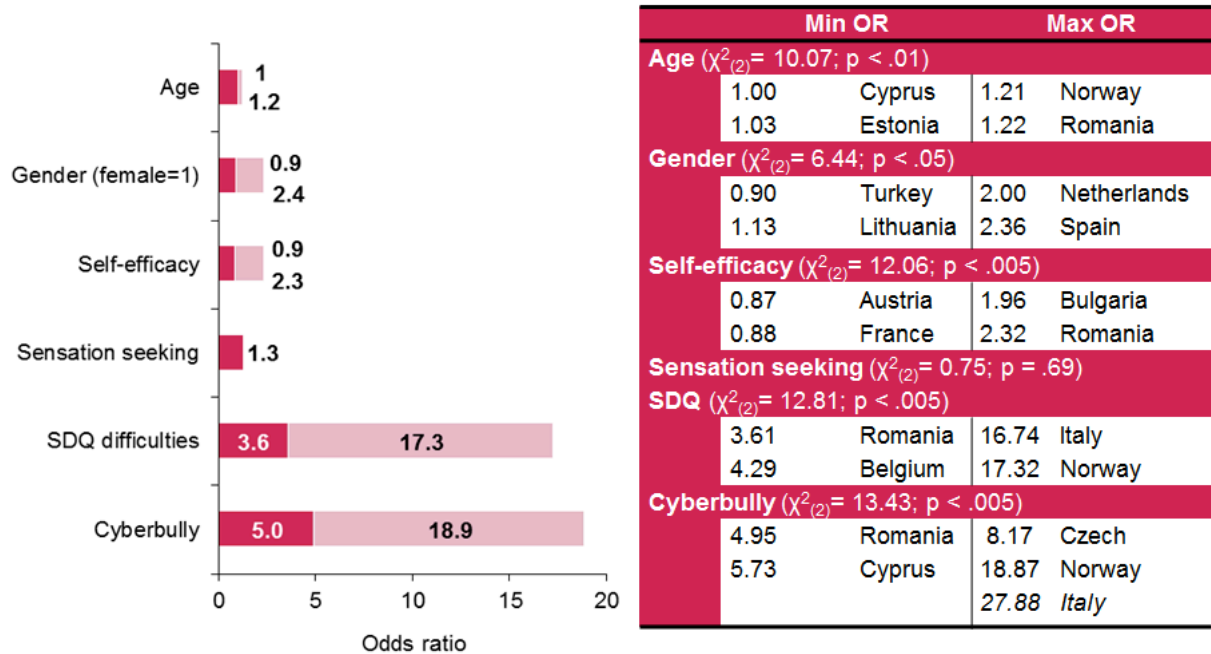
Note: Data are weighted. Whiskers represent 95% confidence intervals. Adapted from (Görzig, 2013) with the author's permission.

As reported in the individual level section, victimisation and perpetration of cyberbullying go hand in hand. Similarly, as the number of youth who report having been bullied increases in a country so does the number of youth who admit having bullied others (Görzig, 2011). Whilst controlling for demographic and psychological factors, the association between victimisation and perpetration varied significantly by country (see Figure 3) (Görzig, 2013). Online bullying perpetration or sending sexual messages to others were most relevant in explaining online victimisation in the majority of countries (Lobe, *et al.*, 2011). Further, the proportion of cyberbullies among bullies in general (i.e., face-to-face, via the internet or mobile phone) varied between countries (Görzig and Ólafsson, 2013).

Upon conducting multilevel logistic regression analysis, significant cross-country variation in predicting cyberbullying victimisation was shown for age, gender, self-efficacy and psychological difficulties but not for sensation seeking (Görzig, 2013). The range of odds ratios per variable, countries showing the highest and lowest associations as well as the significance of cross-country variations are shown in Figure 3. These differences in associations across countries for age, gender and psychological variables with cyberbullying victimisation as well as the link between cyberbullying perpetration and victimisation have

been supported elsewhere (cf. Vazsonyi, *et al.*, 2012). Finally, parental awareness of their child having been bullied online differs across countries (Livingstone, *et al.*, 2011c).

Figure 3: Country variations in predicting cyberbullying victimisation.

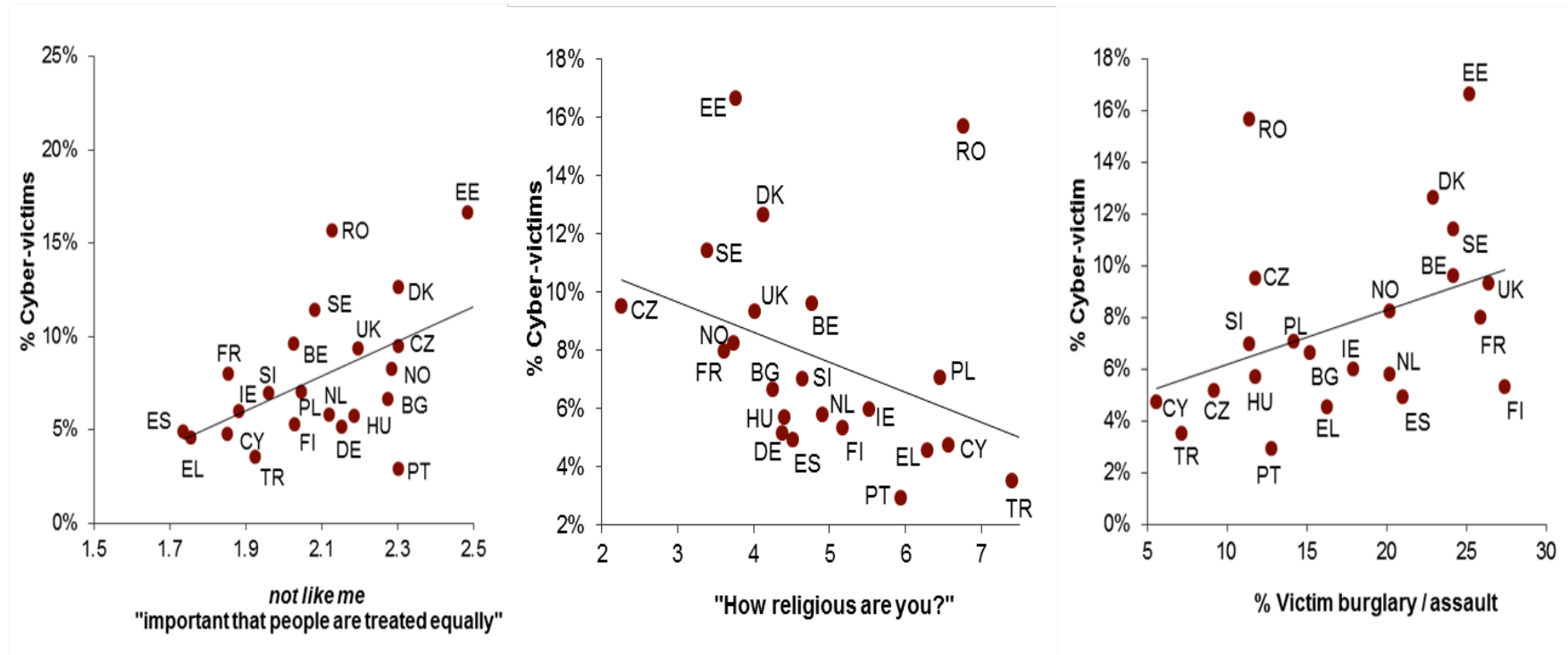


Notes: OR = Odds Ratio; the bar chart shows the lowest odd ratio across countries in dark fill and the highest in light fill; the table shows likelihood ratio test statistics indicating the significance of cross-country variations per variable as well as the countries with the highest and lowest odds ratios upon significant variation; adapted from (Görzig, 2013) with the author's permission.

Country-level variable aggregates and linkage with external indicators. Linking with data from the European Social Survey (2008), higher incidence of cyberbullying could be partially explained by a country's negative average attitudes towards equality, lower average religiosity ratings, and higher crime rates, with all three factors explaining a significant amount of country variation in cyberbullying (see Figure 4) (Görzig, 2013).

Further, countries with higher rates of online bullying were more likely to have a higher incidence of unnatural child deaths (e.g., accidental deaths, suicide deaths, various forms of assault). At the same time the prevalence of exclusively online bullying was not correlated with the national prevalence rate of depressive symptoms nor were depressive symptoms associated with the rate of unnatural child deaths, excluding depression rates as a possible explanation for the link between countries unnatural child deaths with online bullying (Fu, *et al.*, 2014).

Figure 4: % Cyberbullying victims and country-level indicators by country.



Note: Variables explained a significant amount of country variation in cyberbullying (all $\chi^2(1) = 4.5$ to 4.9 ; p 's $< .05$). Adapted from (Görzig, 2013) with the author's permission.

A country's mobile penetration (i.e. mobile phones per hundred inhabitants; Eurostat, 2008) could partially explain cross-country variation in cyberbullying; however, this was due to the relationship between risky online activities and cyberbullying being stronger in countries with a higher mobile phone penetration (Görzig and Ólafsson, 2013).

Lastly, comparing harm experienced from online bullying using a threefold country classification of 'high use, high risk', 'medium use, medium risk' and 'high use, medium risk' (cf. Livingstone, *et al.*, 2011c) it was found that the proportion of youth who reported online bullying to be more severely upsetting was lower in the 'high use, high risk' cluster when compared to the other two country clusters (Vandoninck, *et al.*, 2013).

In conclusion, we find ample evidence of the variation in cyberbullying and its correlates across countries. While only 7% of the variance in the prevalence of cyberbullying victimisation can be explained by the country level, the strengths of other variables that explain further variance in cyberbullying victimisation has also shown to vary across countries. These variables consist of demographic factors, use and activities, psychological factors, parental awareness and the young person being a cyberbully themselves. We also find that there are some factors that show a relation to higher prevalence rates of cyberbullying victimisation on a country level. More studies exploring ostensible explanations for the cross-country variations found have yet to be conducted. However, what we can say with certainty is that the cultural or country level does play a role in the occurrence of cyberbullying even if, as indicated by the low explanatory variance across countries, it is one role among other factors and levels of the socio-ecological system.

CONCLUSIONS

The reviewed evidence connected several factors on the individual, social and cultural level with cyberbullying experiences and harm following victimisation. Generally the findings showed that online bullying is a rather low-prevalence phenomenon in Europe (6% for victims and 3% for bullies). The prevalence reported in this review and most of the literature suggests that contrary to some recent media portrayals, cyberbullying is not occurring at epidemic levels (Sabella, *et al.*, 2013).

In terms of the experience of cyberbullying, several risk and protective factors in cyberbullying have been identified. Cyberbullying experiences in general were more common among older youths, while cybervictimisation was more common among girls and no gender differences emerged for cyberbullying others. Given the generally mixed evidence concerning age and gender differences in cyberbullying, these findings meet supportive as well as conflicting evidence from the literature (cf. Tokunaga, 2010; Kowalski, *et al.*, 2014). This could be due to methodological issues and/or some of the described differential demographic patterns occurring for internet use and activities (Livingstone, *et al.*, 2011c).

In line with previous findings connecting cybervictimisation with poorer psychological outcomes, poorer quality of social relationships and/or social disadvantage (Cappadocia, *et al.*, 2013; Kowalski and Limber, 2013; Vandebosch and Van Cleemput, 2009; Whittle, *et al.*, 2013), cybervictimisation has been found to be associated with higher ostracism and psychological difficulties as well as with some social disadvantage. However, experiencing cybervictimisation was also linked with higher self-efficacy and sensation seeking.

Some of the factors above were connected to the perpetration of cyberbullying but there were also some differences. Cyberbullies seemed to be somewhat less likely to be socially disadvantaged. Psychological factors were generally similar for cyberbullies and victims; however, cyberbullies did not show the enhanced ostracism that cybervictims experienced. Moreover, the group of bully/victims differed from victims and/or bullies. Confirming previous research for youths involved in both of these roles, psychological difficulties seemed to be generally exacerbated (e.g. Gradinger, *et al.*, 2009; Beckman, *et al.*, 2012; Ybarra and Mitchell, 2004).

While these findings suggest that it is important to differentiate the roles of cyberbullying involvement, they also point to the similarities between those roles. Various findings showed a strong association between bullying perpetration and victimisation, both online and offline. This relationship is consistent with findings elsewhere (e.g. Mishna, *et al.*, 2012; Waasdorp and Bradshaw, 2015; Festl, *et al.*, 2014; Menesini and Spiel, 2012).

These associations point to a possible tendency to a general involvement in bullying. Given further findings showing an association of cyberbullying involvement with other risk experiences, this tendency could be extended to other types of risks. Previous research has put forward that those who are prone to risky behaviours in one domain would also be so in others (Jessor, 1991; Carson, *et al.*, 2011; Guilamo-Ramos, *et al.*, 2005), linking this

phenomena to a combination of a lack of impulse control and enhanced sensation seeking (Steinberg, *et al.*, 2008; van Nieuwenhuijzen, *et al.*, 2009) - a notion further supported by the evidence put forward in this review as well as elsewhere (Baumgartner, *et al.*, 2012).

Nevertheless, the findings also point to some behavioural factors that are solely connected to cyberbullying. Coherent with previous research (e.g., Sticca, *et al.*, 2013; Hinduja and Patchin, 2008; Mishna, *et al.*, 2012; Smith, *et al.*, 2008), it was shown that enhanced internet use is connected with cyberbullying victimisation as well as perpetration. However, more online activities, digital skills, or internet ability beliefs were mainly connected with cyberbullying perpetration. The latter finding elaborates on previous evidence that those with more advanced digital skills might engage in more 'deviant' cyber-activities (Vandebosch and Van Cleemput, 2009). Further, the higher digital skills among perpetrators link with the notion of a *power imbalance* between bullies and victims, which has been suggested to occur in cyberbullying via a differential in digital skills – as opposed to face-to-face bullying where power is often linked to physical strengths or peer group popularity (cf. Slonje, *et al.*, 2013). Particular affordances of the internet also interacted with individuals' characteristics in their relation to cyberbullying. For example, while SNS use appears to amplify cyberbullying experiences, this is particularly the case among girls, perhaps because cyberbullying via SNS tends to take the form of relational aggression which has been more commonly observed in girls (Beckman, *et al.*, 2013; Coyne, *et al.*, 2006).

Extending internet use across other levels of the socio-ecological system we find that not only are youths' cyberbullying experiences connected to their own internet use (higher) but also to parental internet use (higher), while parental restrictions towards their child's internet use were linked with a decrease of youths' cyberbullying experiences (see also Navarro, *et al.*, 2012; Mesch, 2009). Taking the cultural level into account, findings showed that the prevalence of cyberbullying victimisation varied across the countries studied. This could partially be explained by cultural factors, such as overall attitudes towards equality (negative), religiosity ratings (lower) or crime rates (higher). However, in line with other cross-national evidence (Genta, *et al.*, 2012), differences among individuals were generally considerably larger than the differences across different European countries. It is possible the analysis of smaller units of more adjacent cultures (i.e., communities) might yield more explanatory power as it has been suggested in the case of bullying research (Swearer, *et al.*, 2006). Nevertheless, country variation has been found for engagement in risky online activities and internet use as well as for the link between victimisation and perpetration. Additionally, the differences between certain individual factors (e.g. age, gender, self-efficacy

and psychological difficulties) varied by country in predicting victimisation. Yet, a strong theoretical framework to explain differences on the cultural level is still lacking.

Generally, a large array of factors across the levels of the socio-ecological system has been uncovered in relation to the risk of cyberbullying experiences among adolescents. However, as pointed out earlier in this review, we consider it crucial to differentiate between risk factors and factors underlying the vulnerability to harm (see also, Livingstone and Smith, 2014; Livingstone and Görzig, 2014). Cyberbullying was shown to be the most harmful negative online experience. Yet, not all youths who were victimized also experienced harm. Several common factors were connected with both increased risk and harm. Examples include being a girl, having psychological difficulties and social disadvantage. However, other factors such as higher sensation seeking, self-efficacy and internet use (parents' and youths'), being bullied offline as well as less restrictive mediation by parents were associated with increased risk but less harm. Further, in countries where youth used the internet more, they also experienced higher risk but were less vulnerable to harm.

Based on these findings, it is possible that while some factors increase exposure to risks, the exposure to some (risky) experiences (e.g. cyberbullying) might also provide opportunities (e.g., digital skills) and help to build resilience toward harmful consequences. This notion is supported by the psychological literature suggesting that exposure to risk and positive adaptations are prerequisites for resilience building (Luthar, *et al.*, 2000; Coleman and Hagell, 2007). The term 'risky opportunities' has been applied in this context (e.g. Hasebrink, *et al.*, 2011; Livingstone, *et al.*, 2011d), illustrating that activities that are related to risks can simultaneously offer opportunities.

Vulnerability to harm was also connected to the application of coping strategies. The interpretation of this link must be cautious, as harm can be both precedence and consequence of coping. Nonetheless, according to the findings, we could argue that the more harm youth endured, the more they were willing to respond to the risk experience. Talking about the experience of being a victim of cyberbullying was one of the most prominent (and often recommended; cf. Dooley, *et al.*, 2010) coping responses. In line with prior research (Perren, *et al.*, 2012), youth most often confided in peers and parents. Overall, less passive responses and more active ones were associated with higher self-efficacy and digital skills, lower psychological difficulties and a less likely involvement as a bully/victim. All of these are factors that have also been linked with less vulnerability to harm online (e.g. Livingstone, *et al.*, 2011d). Furthermore, 'blocking the sender' was reported to be the most effective internet-

specific coping strategy. In addition, 'blocking the sender' was associated with more internet activities among youths which – as pointed out above – are further linked with more digital skills and consequently less harm. Notably, it was generally demonstrated that the factors above which are connected with more effective coping responses are often the same factors associated with a lower vulnerability to harm. Hence, if these factors were addressed, this could potentially enhance coping with the risk experience as well as lessen vulnerability to harm.

Overall, we find reciprocal relationships between risky opportunities, coping and resilience which are often reflected in corresponding relations of factors across all levels of the socio-ecological system. However, we also find that the individual level and particularly factors associated with victimisation have been in the foreground of most researchers' analyses. Future analyses of the data could add on the relations of factors with cyberbullying perpetration. Moreover, the data, being unique in its cross-national scope to assess cyberbullying, offers further opportunities for analyses of country-level variables, ideally against the background of a theoretical model that could help to explain the present variation. Nonetheless, albeit the data's uniqueness in revealing important cultural influences, it appears that the phenomenon of cyberbullying is likely to be universal. This is suggested by the findings demonstrating that variation in cyberbullying was mainly driven by the individual and less by the country level and the fact that individual level findings are largely in concert with those of others using data limited to one country or region only.

In light of the presented evidence as well as the support provided by the literature, we suggest considering the complex interplay between opportunities, risks and harm and their associated factors with and across the different levels of the socio-ecological system to address cyberbullying intervention or prevention efforts. Importantly, as demonstrated in this review, there is considerable variation in factors linked to cyberbullying (risk and harm) on different levels as well as some interactions of factors between levels. Hence, in concert with others (Jones *et al.* 2013; Swearer and Espelage 2011) we propose that any programs should be tailored to the specific target population taking into account their individual, social and cultural background.

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