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Bullying involvement and suicidal ideation in elementary school children across Europe

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1. Introduction

Bullying among elementary school children is ubiquitously recognized as a prevalent issue around the world and is known to be associated with significant mental health problems (Copeland et al., 2013; Menesini and Salmivalli, 2017; Takizawa et al., 2014). Although prevalence estimates vary greatly based on instruments and samples, one in eight (Olweus, 1997) to one in two (Genta, Menesini, Fonzi, Costabile and Smith, 1996 ; Husky et al., 2020)) elementary school children is thought to be involved in bullying in Europe. Subtypes of bullying involvement are further specified to identify victims (children targeted by bullying behavior), bullies (children who engage in bullying behavior towards other children), and bully-victims (children who *both* bully others and are bullied themselves) (Haynie et al., 2001) . Differentiating the bullying involvement subtypes is important as research has shown differential associations with mental health problems among elementary school children. Being a victim of bullying has been shown to be associated with internalizing disorders such as depression and anxiety (Arseneault et al., 2006; Klomek et al., 2009; Løhre et al., 2011; Zwierzyńska et al., 2013). Being involved in bullying others has been associated with aggressive behaviors and externalizing disorders (Cook et al., 2010; Olweus, 1997). Being involved in bullying others and a victim has been associated both with internalizing disorders including depression and anxiety (Arseneault et al., 2006; Hodges and Perry, 1999; Kumpulainen et al., 1998) and externalizing problems (Arseneault et al., 2006).

Several systematic reviews and meta-analyses have shown that any level of involvement in bullying (either as a victim, a bully or both) is associated with suicidal ideation. Specifically, in their 2008 review that included 27 studies conducted in general population samples of children and adolescents, the authors concluded that all bullying subtypes were associated with suicidal ideation and that the strongest association was found for bully-victims (Kim and Leventhal, 2008). One meta-analysis focused on victimization and

suicidal ideation, and confirmed that bullying victimization was associated with an increased risk for suicidal ideation (van Geel et al., 2014). In a meta-analysis that included 47 studies, each bullying subtype was found to be associated with suicidal ideation (Holt et al., 2015). Importantly, the overwhelming majority of this research has been conducted among adolescents 11 and older rather than among children 6-11.

The present study sought to add to this literature in several important ways. First, we sought to examine the associations between suicidal ideation, thoughts of death and bullying involvement subtypes in a large cross-national sample of elementary school children at an age range for which there are little data on the subject. Second, we sought to examine these associations while also adjusting for the presence of probable internalizing and externalizing disorders, as well as for parental factors such as maternal psychological distress. Such factors are rarely controlled for (Kim and Leventhal, 2008), although they are known to be associated both with bullying involvement (Veenstra et al., 2005) and suicidal ideation (Brunstein Klomek et al., 2015). Doing is expected to limit our overestimation of the association of bullying and suicidal ideation. Third, while most of the studies in this area have relied on a single informant to assess bullying involvement and suicidal ideation (Kim and Leventhal, 2008), we sought to limit probable confounding by relying on parent/teacher reports of bullying involvement on one hand and on children for reports of suicidal ideation on the other to limit same informant biases that may contribute to the observed associations. Investigating suicidal ideation and thoughts of death in the context of bullying involvement is important to inform prevention strategies.

The objectives of the present study are to examine bullying involvement and suicidal ideation and thoughts of death health in a large sample of elementary school children across seven countries. Specifically, the present study examines the association between self-

reported suicidal ideation and thoughts of death and being identified as a bully, a victim or a bully-victim, or not involved in bullying.

2. Methods

2.1. Sample and procedure

The School Children Mental Health in Europe (SCMHE) study is a cross-sectional survey conducted in Bulgaria, Germany, Italy, Lithuania, the Netherlands, Romania and Turkey in 2010 using similar methodology to collect data from three informants: children, parents, and teachers. In each country, a three-stage probability sampling method (school-level, class-level and child-level) was used. Passive consent was used for child participation: parents of selected children received a written informed consent form to be signed and returned to the school should they refuse their child's participation in the study. Children who were present on the day of the study and whose parents had not opted out were asked to complete a computerized questionnaire, the Dominic Interactive (DI) to evaluate their self-reported mental health and suicidal ideation. In addition, parents were invited to complete a survey including the Strength and Difficulties Questionnaire (SDQ) and to return it to the school. Teachers were also invited to complete the SDQ regarding participating children. All countries received approval from local ethical review boards. Overall, the study gathered data from at least one informant on 10,245 children between 6 and 11 years old. In the present analyses, the sample was restricted to children who completed the DI and for whom either the mother or the teacher had completed the SDQ (n=5,183).

2.2. Measures

2.2.1. Bullying involvement

Child involvement in bullying was assessed using items of the parent and teacher versions of the Strengths and Difficulties Questionnaire (SDQ) (Goodman, 1997, 2001).

Informants are asked to respond to 25 items covering the previous six months. The SDQ is a widely used screening instrument that is available in numerous languages, including those needed in the context of this cross-national study (<https://www.sdqinfo.org/py/sdqinfo/b0.py>). For the purpose of the present study, two items were used. The first item « Often fights with other children or bullies them», was extracted from the Conduct problems subscale and was used to determine whether or not a child was considered as a bully. The second item « Picked on or bullied by other children» was taken from the Peer problems subscale and was used to determine whether or not a child was considered as a victim of bullying. In order to categorize children based on their bullying involvement status, were considered bullies or victims only those for whom either the mother or the teacher had answered ‘Somewhat true’ or “Certainly true” on either of these items. Children were then categorized into four mutually exclusive groups: bullies (n=740), victims (n=945), bully-victims (n=984) and those not involved in bullying (n=2,514).

2.2.2. Suicidal ideation and thoughts of death

Self-reported mental health including suicidal ideation and thoughts of death were measured using the Dominic Interactive (DI) (Shojaei et al., 2009; Valla, Bergeron, Bidaut-Russell, St-Georges and Gaudet, 1997). The DI is a self-administered computerized questionnaire in which the child is invited to follow a cartoon-like character, Dominic, and is asked whether he or she feels the same as Dominic (whose image can be adapted to match the child’s gender and ethnicity). The DI is available in all languages used in each participating country and has a voice over feature. The emotional and behavioral symptoms of seven DSM-IV (American Psychiatric Association, 1994) childhood mental disorders are assessed. The DI determines the probable presence of internalizing disorders and externalizing disorders based on established cut-points. Suicidal ideation is assessed with the following question: “Do you

sometimes think about death or about killing yourself”, and relies on images of Dominic crying and considering jumping off a bridge. Thoughts of death are assessed with the following question: “Do you often think about death or dying?”, and relies on images of Dominic crying in front of a tombstone with his name on it in a cemetery.

2.2.3. Sociodemographic variables

Sociodemographic variables included child’s gender and age, maternal education level (high school or less, graduated high school, college or more), marital status (single versus in a relationship), maternal employment status (active versus inactive, defined as being a homemaker, student, or unemployed) and country of residence.

2.2.4. Maternal psychological distress

Maternal psychological distress in the previous four weeks was measured using the five-item Mental Health subscale (MH-5) of the SF-36 Short Form (Ware et al., 1994).

2.3.Data analysis

First, we presented sociodemographic characteristics and bullying involvement status in the total sample, among those who endorsed suicidal ideation, and among those who endorsed thoughts of death using cross-tabulations and chi-square tests (Table 1). Second, we presented the prevalence of and unadjusted odds ratios associated with suicidal ideation and suicidal thoughts for each sociodemographic and bullying involvement category using cross-tabulations and univariate logistic regressions (Table 2). Third, multivariate logistic regressions were used to determine adjusted odds ratios (AOR) associated with each outcome (suicidal ideation, thoughts of death) and 95% confidence intervals. Models adjusted for all variables whose OR were associated with a $p \leq .20$ with the outcomes and included the following: bullying involvement (bully, victim, bully-victim, or not involved in bullying), characteristics of the child (sex, and presence of any probable mental disorder) and mother

(highest level of education, age, marital status, employment status, country of residence) and maternal psychological distress. Significance was set at a $p < 0.05$. Analyses were conducted using SPSS v.23.

3. Results

3.1. Sample characteristics

Overall, across countries, 17.0% of children reported suicidal ideation and 20.1% reported thoughts of death, while 74.5% of children reported experiencing neither. When compared to those who did not report suicidal ideation, those who did displayed a different pattern of bullying involvement with fewer children uninvolved (Table 1). A similar pattern was observed regarding those who reported thoughts of death vs those who did not.

3.2. Prevalence and unadjusted odds ratios of suicidal ideation and thoughts of death by bullying status and sociodemographic characteristics

The prevalence of suicidal ideation and thoughts of death differed varied as a function of bullying involvement (Table 2). While SI was reported by 13.3% of those not involved in bullying, 17.1% of victims, 19.6% of bullies and 24.4% of bully-victims reported SI. Similarly, thoughts of death were reported by 19.0% of victims, 24.3% of bullies, and 25.0% of bully-victims. As compared to children not involved in bullying, bully-victims had significantly greater odds of reporting suicidal ideation (OR=2.11, 95%CI=1.75-2.54), as did bullies (OR=1.59, 95%CI=1.28-1.97) and victims (OR=1.35, 95%CI=1.10-1.66). A similar pattern was observed regarding odds of reporting thoughts of death among bully-victims (OR=1.59, 95%CI=1.33-1.90), and bullies (OR=1.54, 95%CI=1.26-1.87), while the odds were not significant regarding victim status (OR=1.13, 95%CI=.93-1.36). The variable with the strongest association with outcomes was the presence of any self-reported mental health

disorder (OR=4.69, 95%CI=4.02-5.48 for SI and OR=3.91, 95%CI=3.37-4.53 for thoughts of death). Children with single mothers were also more likely than their peers whose mother are in a relationship to report SI (OR=1.52, 95%CI=1.26-1.85) and thoughts of death (OR=1.32, 95%CI=1.10-1.59). Maternal psychological distress was also associated with odds of SI (OR=1.34, 95%CI=1.11-1.61). None of the other factors including child gender and age, maternal education or employment status were significantly associated with outcomes.

3.3. Adjusted odd ratios associated with reporting suicidal ideation and thoughts of death by bullying status

In models adjusting for each child and mother sociodemographic variables and for self-reported mental disorders, bullying status was significantly associated with the odds of reporting SI and thoughts of death (Table 3). Being identified as a bully (AOR=1.30, 95%CI=1.01-1.66) was associated with increased odds of reporting suicidal ideation (AOR=1.30, 95%CI=1.01-1.66) and thoughts of death (AOR=1.48, 95%CI=1.18-1.86). Being identified as a bully-victim was also associated with odds of suicidal ideation (AOR=1.54, 95%CI=1.22-1.94) and thoughts of death (AOR=1.34, 95%CI=1.07-1.68).

4. Discussion

The present study examined self-reported suicidal ideation and thoughts of death by bullying status to include bullies, victims and bully-victims in a large sample of elementary school children across Europe. Using estimates of bullying involvement based on the mother or teacher endorsing a moderately low threshold of involvement in bullying covering the previous six months, the present findings confirm the association of bullying involvement and suicidal ideation and thoughts of death in children ages 6 to 11. Importantly, these

associations held true only for those involved in bullying others when adjusting for probable mental disorders and key parental factors.

There has been an extensive amount of research both on the cross-sectional (Holt et al., 2015; Kim and Leventhal, 2008) and longitudinal (Brunstein Klomek et al., 2015) association of bullying involvement and suicidal ideation among youth. To the best of our knowledge, none of these studies have examined this issue among children as young as 6 years old. Consistent with prior studies in older samples (Holt et al., 2015; Kim and Leventhal, 2008), our findings show that in bivariate models, each subtype of bullying involvement is associated with larger proportions of children endorsing suicidal ideation and thoughts of death, with the exception of being identified and a victim which was not significantly associated with thoughts of death. Importantly, the present study addresses key covariates known to be associated with involvement in bullying and child mental health (Brunstein Klomek et al., 2015; Veenstra et al., 2005). In multivariate models adjusting for the presence of probable child internalizing and externalizing disorders, maternal psychological distress, marital and employment status, the association remained significant only for the two groups involving bullying others: bullies and bully-victims. The present findings are consistent with extent research identifying bully-victims as presenting with a high risk of mental health problems (Husky et al., 2020) including suicidal ideation (Husky et al., 2020; Kim and Leventhal, 2008). However, victimization alone was no longer associated with suicidal ideation in adjusted models. This finding may in part be due to the manner in which bullying involvement was assessed. Indeed, one study has shown that among children aged 9 to 13 indirect bullying victimization was associated with suicidal ideation, and the strength of this association was somewhat stronger than that observed with direct bullying victimization (van der Wal et al., 2003). As bullying involvement was assessed by parents and teachers, it is possible that indirect bullying may have been missed, as this form of behavior may be subtler

and more likely to occur under the radar of adults. The absence of a significant adjusted association with victimization in the present study contrasts with one study conducted among children with a mean age of 12.3 years that had relied on peer nomination to identify bullying involvement and had addressed parental psychopathology (Herba et al., 2008). In the latter study, the association between victimization and suicidal ideation was moderated by the presence of parental internalizing disorders. Lastly, the absence of an association with victimization could be due to the fact that the seriousness of suicidal ideation or its duration were not assessed. Had the study addressed severe suicidal ideation only, it is possible that an association could have been present.

Importantly, while the majority of the cross-sectional studies reviewed in meta-analyses and systematic reviews (Kim and Leventhal, 2008) relied on child informants only to determine both bullying involvement and suicidal behavior, the present study did not. By doing so, we limited the risk of single informant biases when examining the association between these variables. To illustrate this point, one study that had relied on child-reported victimization and both child- and parent-reported mental health suggested an association of victimization with internalizing or externalizing problems only when child-reported (Shojaei et al., 2009).

Successful anti-bullying programs such as the Olweus Bullying Prevention Program (Olweus and Limber, 2010) are being used in Northern Europe and in the U.S.. However, such programs are not currently systematically used in schools in other countries including countries covered in the present study. As it has been recommended for years, evidence-based prevention programs should be implemented in schools and assessed for sustainability and acceptability (Bradshaw, 2015). Furthermore, as increasing numbers of children come to own a smartphone in elementary school and are becoming involved with social media (Sohn et al., 2019), the issue of cyberbullying may come to affect youth at an increasingly younger age.

The nature of cyberbullying may also in turn contribute to an increased risk of experiencing suicidal ideation among children as is currently the case among adolescents (Dorol--Beauroy-Eustache and Mishara, 2021; Ybarra et al., 2007), as may excessive use of smartphones (Kim et al., 2019; Yang et al., 2020). In addition, screening for mental health problems and improving access to care when needed may contribute to limiting the mental health burden associated with bullying involvement. However, beyond the rationale for putting in place screening measures, the question of whether it should be conducted within schools (Husky et al., 2011; Vander Stoep et al., 2005) or within primary care settings (Dworkin, 1993; Frankenfield et al., 2000; Husky et al., 2010; Zuckerbrot et al., 2007) may depend on country-level resources and cultural specificities. Furthermore, screening is only useful if it is accompanied by a solid plan and resources to facilitate access to appropriate specialized services which remains a challenging feat (Husky et al., 2011). Again, the availability of specialized child mental health resources is known to vary based on country-level and within country regional level disparities (Kovess-Masfety et al., 2017).

Limitations

The present study holds several limitations. First, with the exception of the Lithuanian sample, none of the other samples were designed to be representative of their country's population of elementary school children. Furthermore, participation rates were relatively modest and varied by country thereby limiting the generalizability of the findings. Second, bullying involvement was determined using two items of the mother- and teacher-SDQ. As a consequence, we are likely to have underestimated bullying involvement if adults were not made aware. In addition, this measure of bullying involvement cannot be equated to assessments of bullying involvement using validated instruments addressing a range of behaviors including indirect forms of bullying such as relational bullying (Hawker and

Boulton, 2000) and cyberbullying. Third, on a related matter, we acknowledge that the data were collected in 2010 and therefore are likely not to capture the experiences of today's children with regard to social media and their potential association with bullying involvement, especially among older children. That being said, to the best of our knowledge, there are no comparable cross-national datasets covering children in that age range and that rely on multiple informants. Moreover, there is little reason to believe that the observed associations between bullying involvement and suicidal ideation and thoughts of death have changed over the past ten years. Lastly, suicidal ideation and thoughts of deaths were assessed dichotomously to reflect their presence or absence. Outcomes taking into account their intensity and frequency may have yielded stronger associations with bullying involvement.

5. Conclusion

Suicide deaths are rare in the 6-11 age group (World Health Organization, 2019). Suicidal ideation and thoughts of death assessed here cannot be construed as reflecting severe ideation. However, consistent with extant research conducted among adolescents, bullying involvement was associated with greater odds of reporting such ideation among children. These findings support both the need for bullying prevention as well as the issue of mental health screening of children particularly when they have some involvement in bullying. Considering the increasingly young age at which children are provided with a smartphone and have access to social media platforms, future studies should consider these recent developments into account as they are likely to affect children significantly and earlier in life than was previously the case.

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Table 1. Sociodemographic characteristics and bullying involvement of the total sample, those who endorsed suicidal ideation, and those who endorsed thoughts of death.

	Total N=5,183		Suicidal thoughts n=881		Thoughts of death n=1,041	
	n	%	n	%	n	%
Bullying status (n=5,183)	5,183		881		1,041	
Not involved	2,514	48.5	334	37.9	435	41.8
Bully	740	14.3	145	16.5	180	17.3
Victim	945	18.2	162	18.4	180	17.3
Bully-victim	984	19.0	240	27.2	246	23.6
<i>Chi2 (p-value)</i>			66.220 (.000)		35.850 (.000)	
Child's sex (n=5,183)	5,183		881		1,041	
Boy	2,608	50.3	461	52.3	533	51.2
Girl	2,575	49.7	420	47.7	508	48.8
<i>Chi2 (p-value)</i>			<i>1.713 (.191)</i>		<i>.406 (.524)</i>	
Child's age (n=5,097)	5,097		862		1,018	
6-7	1,162	22.8	204	23.7	241	23.7
8-9	2,407	47.2	412	47.8	461	45.3
10-11	1,528	30.0	246	28.5	316	31.0
<i>Chi2 (p-value)</i>			<i>1.133 (.568)</i>		<i>1.920 (.383)</i>	
Maternal education (n=4,495)	4,495		779		939	
High school or less	2,236	49.7	393	50.4	475	50.6
Graduated high school	1,662	37.0	277	35.6	342	36.4
Some college or more	597	13.3	109	14.0	122	13.0
<i>Chi2 (p-value)</i>			<i>.964 (.618)</i>		<i>.342 (.843)</i>	
Maternal employment status (n=4,743)	4,743		797		955	
Active	3,317	69.9	549	68.9	662	69.3
Inactive	1,426	30.1	248	31.1	293	30.7
<i>Chi2 (p-value)</i>			<i>.504 (.478)</i>		<i>.215 (.643)</i>	
Maternal marital status (n=4,928)	4,928		833		986	
In a relationship	4,196	85.1	669	80.3	810	82.2

	Single	732	14.9	164	19.7	176	17.8
	<i>Chi2</i> (p-value)			18.521 (.000)		8.748 (.003)	
Maternal psychological distress (n=4,898)		4,898		831		982	
	Presence	862	17.6	177	21.3	185	18.8
	Absence	4,036	82.4	654	78.7	797	81.2
	<i>Chi2</i> (p-value)			9.451 (.002)		<i>1.302 (.254)</i>	
Country of residence (n=5,183)		5,183		881		1,041	
	Bulgaria	953	18.4	188	21.3	203	19.5
	Germany	419	8.1	104	11.8	135	13.0
	Italy	687	13.3	68	7.7	53	5.1
	Lithuania	1,016	19.6	238	27.0	216	20.7
	Netherlands	635	12.3	93	10.6	178	17.1
	Romania	983	19.0	127	14.4	147	14.1
	Turkey	490	9.5	63	7.2	109	10.5
	<i>Chi2</i> (p-value)			97.534 (.000)		148.215 (.000)	

Bold represents statistically significant intergroup differences among a factor.

*overall sample: n=5,183

Table 2. Prevalence and unadjusted odds ratios of suicidal ideation, and thoughts of death by sociodemographics, and bullying involvement status.

	Suicidal ideation n=881				Thoughts of death n=1,041			
	n	%	OR*	95% CI	n	%	OR*	95% CI
Child's sex (n=5,183)								
Boy (ref=girl)	461	17.7	1.10	.95-1.27	533	20.4	1.05	.91-1.20
Child's age (n=5,097)								
6-7	204	17.6	ref		241	20.7	ref	
8-9	412	17.1	.97	.81-1.17	461	19.2	.91	.76-1.08
10-11	246	16.1	.90	.74-1.11	316	20.7	1.00	.83-1.20
Maternal education (n=4,495)								
High school or less	393	17.6	.96	.76-1.21	475	21.2	1.05	.84-1.31
Graduated high school	277	16.7	.90	.70-1.14	342	20.6	1.01	.80-1.27
Some college or more	109	18.3	ref		122	20.4	ref	
Maternal employment status (n=4,743)								
Inactive (ref=active)	248	17.4	1.06	.90-1.25	293	20.5	1.04	.89-1.21
Maternal marital status (n=4,928)								
Single (ref= in a relationship)	164	22.4	1.52	1.26-1.85	176	24.0	1.32	1.10-1.59
Maternal psychological distress (n=4,898)								
Presence (ref=absence)	177	20.5	1.34	1.11-1.61	185	21.5	1.11	.93-1.33
Bullying status (n=5,183)								
Not involved	334	13.3	Ref	Ref	435	17.3	Ref	Ref
Bully	145	19.6	1.59	1.28-1.97	180	24.3	1.54	1.26-1.87
Victim	162	17.1	1.35	1.10-1.66	180	19.0	1.13	.93-1.36
Bully-victim	240	24.4	2.11	1.75-2.54	246	25.0	1.59	1.33-1.90
Any disorder (n=5,183)	425	37.3	4.69	4.02-5.48	454	39.9	3.91	3.37-4.53

Bold represents statistically significant intergroup differences among a factor.*odds of presenting with SI, using as the reference group children who do not have suicidal thoughts (same for thoughts of death) .

. **Table 3.** Adjusted odd ratios associated with reporting suicidal ideation and thoughts of death.

		Suicidal ideation		Thoughts of death	
		AOR	95% CI	AOR	95% CI
Socio-demographic factors					
Child's gender					
	Girl	Ref.		Ref.	
	Boy	1.13	.95-1.35	1.05	.89-1.23
Maternal employment status					
	Active	Ref.		Ref.	
	Inactive	1.01	.83-1.22	.99	.83-1.18
Maternal marital status					
	In a relationship	Ref.		Ref.	
	Single	1.22	.97-1.52	1.19	.96-1.48
Maternal psychological distress					
	Absence	Ref.		Ref.	
	Presence	1.06	.85-1.32	.94	.76-1.16
Bullying status					
	Not involved	Ref.		Ref.	
	Bully	1.30	1.01-1.66	1.48	1.18-1.86
	Victim	1.02	.80-1.30	1.07	.86-1.34
	Bully-victim	1.54	1.22-1.94	1.34	1.07-1.68
Any disorder					
	Absence	Ref.		Ref.	
	Presence	4.69	3.94-5.59	4.32	3.66-5.12

Bold represents statistically significant odds ratios at $p < 0.05$. Adjusted odds ratios (AOR) are adjusted for country and for all variables present in the table. Sample for analysis: $n=4,484$.