RESEARCH ARTICLE

The Role of Community, Family, Peer, and School Factors in Group Bullying: Implications for School-Based Intervention

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ABSTRACT

BACKGROUND: Although an ecological perspective suggests the importance of multiple levels of intervention, most bullying research has emphasized individual- and school-focused strategies. This study investigated community and family factors that influence school efforts to reduce odds of group bullying behavior and victimization.

METHODS: We used multilevel logistic regression to analyze data from the 2009 Youth in Iceland population school survey (N = 7084, response rate: 83.5%, 50.8% girls).

RESULTS: Parental support and time spent with parents were protective against group bullying behavior while worsening relationships with teachers and disliking school increased the likelihood of such behavior. Knowing kids in the area increased the likelihood of group bullying while intergenerational closure was a protective factor. Normlessness was consistently positively related to group bullying. We found no indication of higher-level relationships across the bullying models. Parental support was protective against victimization. Disliking school, intergenerational closure, and anomie/normlessness were strongly and negatively related to victimization. We found some indication of multilevel relationships for victimization.

CONCLUSIONS: Findings support efforts to increase family and community connection, closure, and support as a part of school-based intervention. These factors become more important as young people participate in or experience greater odds of group bullying behavior and victimization.

Keywords: bullying; school health; community intervention; adolescent health; social support.

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Research demonstrates that bullying interventions in the United States are rarely effective.[1] Three meta-analyses found that typical bullying interventions tend to focus on creating a school climate that is intolerant of bullying behaviors, establishing clear consequences for bullying behavior, and supporting students as defenders of victimized students.[2-4] However, these strategies produce mixed[4] to small effects.[2,3]

Most attempts to intervene can be categorized as emphasizing individual, school, or other factors external to schools such as community or family characteristics. In individual-focused intervention, bullying behaviors are conceptualized as being a product of person-centered characteristics that include biological and developmental factors such as age[1,5] or sex.[6] Examples of individual-focused intervention strategies may include correctly identifying vulnerable children and establishing effective counseling or behavior management techniques.

In school-focused intervention, bullying behaviors are considered to be a product of school-level contextual characteristics such as school climate[7,8] or student connectedness to school.[9] Studies emphasizing school-focused interventions suggest that school environments that produce increased odds of bullying behaviors and experiences with victimization are fundamentally different from school environments

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that do not. As a result, school-focused interventions tend to focus on making school environments safer for vulnerable students.

In community or family-focused intervention, bullying behaviors are thought to be a product of contextual characteristics external to schools such as levels of parental support[10] or community socioeconomic status.[11] Researchers emphasizing community or family-focused intervention suggest that certain community and family factors contribute to higher levels of bullying and victimization within those families and communities. Additionally, they assume that the community-wide prevalence of these factors can also influence the vulnerability of other children, families, and even schools within those communities.[12,13] Community and family-focused interventions tend to include fostering communities and families that work toward common goals, developing capacity to achieve those goals, and strengthening communication and social support networks.

Although an ecological perspective suggests that intervention at each level is important, most research has focused on intervention at the individual and school levels; much less work has been completed at the community and family levels. Many researchers recognize this empirical oversight[1] and call for more studies that investigate community and family-level factors.[10,14-16] In particular, in Hong and Espelage's[1] comprehensive review of the bullying literature, the authors suggest that future research needs to be directed at investigating community and family factors that may contribute to improving the effectiveness of school-based interventions.

Additionally, although bullying often is conceptualized in terms of an individual's pattern of behavior, many researchers also have called for more studies that explicitly focus on the often peer influenced, social, and group nature of bullying and victimization. Specifically, Espelage and Ireland recommend further investigations emphasizing the social or group dimension of bullying, as bullying typically occurs in group settings[17] and because the group nature of bullying suggests the importance of peer influence in both bullying and victimization.[18] Although other researchers have begun exploring the peer and group dimensions of bullying and victimization,[19-22] few studies have done so while considering the relative importance of other social relationships found within communities, families, and schools.

The purpose of this study was to investigate community, school, and family factors associated with group bullying behavior and experiencing victimization, particularly as compared to peer and school factors. We believe that by better understanding community and family-related factors, we can be more effective at (1) developing school-based interventions that reduce odds of group bullying behavior and victimization;

and (2) engaging families and community members as partners in school-led efforts to ensure the physical and emotional safety of children in their care.

On the basis of Developmental Systems,[23,24] Anomie,[25,26] and Social Capital[12,13,27] theories, we hypothesized that young people who reported being associated with parents, caregivers, and community members who offered higher levels of connection, closure, and support would report lower odds of group bullying behavior and experience victimization less frequently than young people who were less well connected or supported. Specifically, we investigated the relationships between group bullying behavior and victimization experiences:

1 *Parents and caregivers* spending time with their children,[28] being described as supportive by their children,[28] monitoring their children's activities and whereabouts,[24] and having their own adult networks of friendship, assistance, and support;[29]
2 *Neighbors* knowing their children's friends and children's friends' parents and working with them to coordinate and monitor young people's activities[29,30] (Community Closure), choosing to intervene when they see community children in need or behaving poorly[24] (Community Intervention), and successfully teaching and role modeling a common set of meaningful community values or beliefs[25] (Minimizing Anomie);
3 *Children* knowing other young people in their neighborhoods,[5] and receiving support from their peers when required or necessary;[31]
4 *School professionals* creating and maintaining school environments that children look forward to attending,[7] and staffing their schools with professionals that children respect and enjoy interacting with.[32]

On the basis of previous research, we expected the school variables to demonstrate the most substantial relationships.[8,33,34] However, we also expected to see family and community variables exert a protective association for individual students.[28] Additionally, we anticipated that students who participated in different levels of group bullying behavior and experienced different levels of victimization would fit different risk and protective profiles based on their levels of family and community connectivity, closure, and support[10,28,29,31] and that these variables would become increasingly influential as odds of group bullying and victimization increased. Finally, although we assumed students with the highest individual levels of connection, closure, and support would receive the greatest protective benefits; we also expected that differences in community-level characteristics would produce different odds of bullying behavior

and experiencing victimization even after accounting for these characteristics at the individual level.[16]

METHODS

Participants

This study utilized population-wide cross-sectional data from the 2009 *Youth in Iceland* survey among students, aged 14 to 16 years, who were enrolled in the 9th and 10th grades in all Icelandic secondary schools. Conducted by the Icelandic Centre for Social Research and Analysis (ICSRA) at Reykjavik University[35,36] all aspects of data collection, including participant involvement based on passive parental consent, were conducted in accordance with Icelandic guidelines for the protection of research participants. The total number of responses was 7514 (50.8% girls) and yielded a response rate of 83.5% of the total national population of Iceland in these age groups. Because of item nonresponse on nominal variables data from 7084 individuals that are nested within 140 schools (of a total of 146 schools in the country) were used in the current analysis (94.6% of the original sample). Missing values in continuous/ordinal items were replaced with the respective grand mean (max. 3.6% of within variable responses). A background check was conducted concerning individual missing students within school and it revealed no particular pattern of reasons; rendering systematic bias in the data an unlikely event.

Instruments

Although exemptions do occur in the Icelandic school communities are defined by regional areas and town districts. As a result our school-level data should contain the specific community characteristics for a given school area or neighborhood.

Dependent Variables

Bullying behaviors. Bullying behaviors were assessed with three questions constructed and developed by the Icelandic Institute for Educational Research (IER) and ICSRA[19] and were headed with: ''During the past 12 months how often have you'' and the following 3 items: (1) ''Participated with a group teasing an individual,'' (2) ''Participated with a group of kids hurting an individual,'' and (3) ''Participated in a group starting a fight with another group.'' Response categories were coded with 0 = ''Never,'' 1 = ''Once,'' 2 = ''Twice,'' 3 = ''3 to 4 times,'' and 4 = ''5 times or more.'' For the purpose of this analysis we recoded the bullying behavior measures into 4 exclusive and dichotomized variables to account for differences in reported bullying behaviors. The first group includes those who responded with ''Never'' to all 3 questions. This is the reference category in all statistical models.

The second group includes those responding with a ''Once'' to only one of any of the 3 questions, the third group includes those reporting to participate in any form of bullying behaviors twice during the past 12 months, and the fourth group those reporting any form of bullying behaviors 3 times or more during the last 12 months.

Victimized by bullying behaviors. As with bullying behaviors, victimization was assessed with 3 questions constructed and developed by IER and ICSRA[19] and were headed with: ''During the past 12 months how often have you'' and the following: (1) ''Been individually teased by a whole group of kids,'' (2) ''A group of kids attacked you and hurt you when you were alone,'' and (3) ''Been in a group that was attacked by another group of kids.'' Response categories were coded with 0 = ''Never,'' 1 = ''Once,'' 2 = ''Twice,'' 3 = ''3 to 4 times,'' and 4 = ''5 times or more.'' We then recoded the victimization measures into four exclusive and dichotomized variables to account for differences in victimization experiences using the same approach as with bullying behavior.

Independent Variables

Parental factors. We assessed parental influences with 4 measures: (1) ''Parental neighborhood connectedness'' (6 items, Cronbach's alpha [CA] = .91). Example item responded to on a 5-point Likert scale: ''My parents have friends that live close to our home.'' (2) ''Parental monitoring'' (2 items, CA = .86). Example item responded to on a 4-point scale: ''My parents know whom I am with during the evenings.'' (3) ''Parental support''[37] (5 items, CA: .86). Example item responded to on a 4-point Likert scale: ''How easy or hard would it be for you to acquire caring and warmth from your parents.'' (4) ''Time spent with parents'' (2 items, CA: .80). Example item responded to on a 4-point Likert scale: ''How much time do you usually spent with your parents during weekends.'' In all instances higher score on the parental variables reflects an increase in connectedness, monitoring, and time.

School factors. We assessed the influences of the school environment with 2 measures: (1) ''Dislikes attending school'' (3 items, CA: .81). Example item responded to on a 5-point Likert scale: ''I feel bad at school.'' (2) ''Relationship with teachers'' assessed with the item: ''I get on badly with the teachers'' and the same response categories as for disliking attending school. Higher score reflects more dislike and worse perceived relationship with teachers.

Peer group factors. We assessed the peer group influences with 2 measures: (1) Knowing other kids in the area'' (3 items, CA: .88). Example question: ''How many kids your age living close to you do you know by sight?'' responded to on a 5-point count scale. (2)

"Peer support" (5 items, CA: .89). Example question responded to on a 4-point Likert scale: "How easy or hard would it be for you to acquire caring and warmth from your friends?" Higher variable scores reflect knowing more kids in the area and greater levels of perceived peer support.

Community factors. We assessed community factors with 3 measures: (1) "Intergenerational closure"[38] (4 items, CA: .83). Example item responded to on a 4-point Likert scale: "My parents know my friends." (2) "Neighbors intervening into youth matters" (5 items, CA: .83). Example item responded to on a 5-point Likert scale: "Neighbors would do something if a fight broke out in front of their house." (3) Anomie/Normlessness[39] (8 items, CA: .85). Example item responded to on a 5-point Likert scale: "One can break most rules if they don't seem to apply." Higher variable scores indicate more closure, increased likelihood of neighbors intervening and greater sense of anomie.

All but 3 independent measures are relatively normally distributed with a skew and kurtosis within the suggested range of ±1.0.[40] The measures pertaining to parental support and relationship with teachers are slightly skewed (−1.48 and −1.41, respectively) and their kurtosis score is also above the rule of thumb (2.22 and 1.48, respectively). Owing to a greater skew and kurtosis in the measure on school dislike it was transformed with a natural logarithm that brought the scores into the suggested range.

Control Variables

Sex. Sex was coded 1 for girls (51.5%) and 0 for boys. *Family structure* was measured with the question "Who lives in your home?" The 8 response categories were collapsed to form a dichotomized measure with 0 = Both parents (70.3%) and 1 = Other forms. Parental education was measured with 2 questions headed with "What is the highest level of education by your mother and father?" Responses range from 1 = "Finished secondary school or less" to 5 = "College graduate" and were mean-centered for these analyses. Family financial status was measured with the question: "If you think about the financial position of your family, how is it in comparison to other families in Iceland?" Response categories range from 1 = much worse to 7 = much better. Additionally, about 13% of the respondents in the study do not attend school in their home neighborhood. We controlled for this discrepancy. Finally, we controlled for environmental changes related to moving between neighborhoods and/or changing schools with the questions: "Have you ever, during the last 12 months: (1) changed schools; and (2) moved between neighborhoods." Response categories were 0 = No and 1 = Yes.

Procedures

Under ICSRA oversight, teachers at each school supervised questionnaire completion onsite. A detailed description of data collection procedures has been published previously.[29]

Data Analysis

Our analyses were conducted using multilevel logistic regression for binary data.[41] All individual level variables are estimated with random effects and reported as such if statistically significant. First we ran the "empty" model without any predictor variables to assess the variance in the outcome variable that is attributable to the school-level and report the intra-class correlation coefficients (ICC). We then proceeded to include 6 complete models, one for each category of bullying behavior and victimization with "zero bullying behavior/victimization" during last 12 months as the reference category. We included individual level fixed effects and report any significant random effects, or unexplained variance between schools, in the mean odds of the independent variables, both in the intercept and predictor variables. The method of estimation is restricted penalized quasi-likelihood and all significance tests are based on robust standard errors.

RESULTS

Table 1 depicts the descriptive statistics for all study variables. A little less than 17% of the participants have been involved in any form of the 3 bullying behaviors and just over 10% report victimization of any kind.

Table 2 displays the results for the 3 bullying behavior models. Parental support was protective against bullying behavior in models 1 and 3 (odds ratios [ORs] = 0.97 and 0.95, respectively), and time spent with parents against bullying behavior in models 2 and 3 (ORs = 0.89 and 0.92, respectively). With regards to school factors worsening relationship with teachers was consistently related to greater odds of bullying behavior (ORs = 1.18, 1.22, and 1.57 for models 1, 2, and 3, respectively) and disliking attending school in models 2 and 3 (ORs = 1.55 and 1.42, respectively). Concerning the peer group measures knowing other kids in the area consistently increased the likelihood of bullying behavior (ORs = 1.04, 1.05, and 1.06 for models 1, 2, and 3, respectively) but no such relationship was found for peer support. Of the community variables intergenerational closure was protective against bullying behavior in all our models (ORs = 0.96, 0.95, and 0.98, respectively). However, anomie was positively related to bullying behavior in all three models (ORs = 1.03, 1.06, and 1.09, respectively).

With regards to the multilevel analyses the empty models indicate that 3.6%, 5.9%, and 1.5% of the variation in the outcome for bullying behaviors models

Table 1. Descriptive Statistics for All Study Variables
(N = 7084)

Categorical Variables (Unweighted)	n	%
Bully behavior 1	534	7.5
Bully behavior 2	368	6.0
Bully behavior 3	246	4.1
Victimized by bullying behavior 1	323	4.9
Victimized by bullying behavior 2	140	2.2
Victim by bullying behavior 3	239	3.7
Sex (girls)	3648	51.5
Family structure (other)	2107	29.7
Residential move last 12 months (yes)	678	9.6
School change last 12 months (yes)	490	6.9
Not attend school in the area (yes)	945	13.3

Continuous and ordinal variables (unweighted)	Min.	Max.	Mean	SD
Mother education	−3.14	1.86	−0.01	1.58
Father education	−3.10	1.90	0.01	1.56
Family finance	1.00	7.00	3.52	1.05
Parental connectedness	6.00	30.00	21.30	6.30
Parental monitoring	2.00	8.00	6.16	1.66
Parental support	5.00	20.00	17.54	3.00
Time spent with parents	2.00	10.00	6.46	2.05
Dislike attending school	1.10	2.71	1.48	0.45
Relationship with teachers	1.00	5.00	1.76	1.01
Intergenerational closure	4.00	16.00	10.57	2.76
Neighbors intervene	5.00	25.00	18.25	4.33
Anomie	8.00	40.00	23.75	6.27
Knows other kids in the area	3.00	15.00	10.73	3.22
Peer support	5.00	20.00	16.07	3.37

SD, standard deviation.

1, 2, and 3, respectively can be attributed to the school community variance. We consistently found random effects in the intercept which means that the prevalence of all bullying behaviors were significantly different across the school neighborhoods/areas in our data. On the other hand, we found no evidence of random slopes or context effects (higher level relationships) for any of the 3 bullying behavior outcomes.

Table 3 displays the results for the 3 victimization models. As with bullying behavior, parental support was protective against victimization in models 1 and 3 (ORs = 0.94 and 0.91, respectively), as was parental connectedness in model 3 (OR = 1.03). Of the school factors disliking attending school was strongly related to victimization in all our models (ORs = 2.09, 3.80, and 5.73 for models 1, 2, and 3, respectively). However, relationship with parents was not related to victimization experiences in our analyses. With regards to the peer group measures only peer support for victimization in model 3 was protective against such experience (OR = 0.96). Of the community measures intergenerational closure was protective against victimization in model 3 only (OR = 0.91) and anomie was positively related to victimization in models 1 and 2 (ORs = 1.02 and 1.03, respectively).

With regards to the multilevel analyses the empty models indicate that 5.5%, 5.4%, and 1.1% of the variation in the outcome for victimization in models 1, 2, and 3, respectively can be attributed to the school community variance. In the multilevel analyses we observed a contextual relationship between anomie and victimization in the first model (school level OR = 1.12). This means that anomie related positively to victimization experiences for group 1 on the school community level over and above the individual level relationships between these variables. We also observed a random intercept in model 3, which means that the prevalence of victimization as defined in models 3 was differentially distributed across the school communities in our data. Finally, we found evidence of random slopes for the relationship between disliking attending schools and victimization 3. This means that the relationship between these variables varies significantly across the school community areas in our data.

DISCUSSION

This study yielded several important findings related to relationships between community and family connection, closure, and support and group bullying behaviors and victimization. These included:

Higher levels of community and family connection, closure, and support reduced the odds of young people choosing group bullying behaviors and experiencing victimization. Specifically, the odds of group bullying behaviors increased as levels of time spent with parents, parental support, community closure, and adherence to community values decreased. Further, the odds of experiencing victimization increased as levels of parental support, community closure, and peer support decreased. Perhaps contrary to expectations, neither group reported benefiting from increased parental monitoring or from neighbors/community members intervening when they saw community children behaving poorly. In fact, odds ratios indicated higher risk for young people who had experienced victimization and reported higher levels of parental monitoring.

Community and family connection, closure, and support became more influential as odds of group bullying and victimization increased. Students who reported less participation in group bullying behavior also demonstrated fewer significant relationships between community and family factors; however, as with greater odds of group bullying behavior among students, the number of significant community and family factors increased as well. Further, the influence of these factors increased dramatically as odds of bullying increased. For instance, anomie doubled for students who had increased their bullying behavior from 1 to 2 incidents during the past 12 months.

Table 2. **Multilevel Correlates of Bullying Behavior - Logistic Regression Models With Odds Ratios and 95% Confidence Intervals**

Model Individual Level Fixed Effects	Bully Behavior 1[†] OR	(95% CI)	Bully Behavior 2[‡] OR	(95% CI)	Bully Behavior 3[§] OR	(95% CI)
Parental factors						
Parental connectedness	0.99	(0.98-1.01)	1.02*	(1.00-1.04)	0.99	(0.97-1.01)
Parental monitoring	0.98	(0.94-1.04)	0.98	(0.91-1.05)	0.94	(0.87-1.01)
Parental support	0.97*	(0.94-0.99)	0.99	(0.95-1.03)	0.95**	(0.92-0.98)
Time spent with parents	0.98	(0.93-1.03)	0.89**	(0.84-0.94)	0.92*	(0.86-0.98)
School factors						
Dislike attending school	1.14	(0.89-1.45)	1.55**	(1.20-2.02)	1.42*	(1.01-2.00)
Relationship with teachers	1.18**	(1.08-1.30)	1.22**	(1.08-1.37)	1.57**	(1.40-1.76)
Peer group factors						
Knows other kids in the area	1.04**	(1.01-1.08)	1.05**	(1.02-1.08)	1.06*	(1.01-1.12)
Peer support	1.00	(0.93-1.03)	1.03	(1.00-1.06)	1.03	(0.99-1.07)
Community factors						
Intergenerational closure	0.96*	(0.93-1.00)	0.95*	(0.91-0.99)	0.89**	(0.85-0.94)
Neighbors intervene	1.00	(0.98-1.02)	0.98*	(0.96-1.00)	1.00	(0.97-1.03)
Anomie (Normlessness)	1.03**	(1.01-1.04)	1.06**	(1.04-1.08)	1.09**	(1.07-1.12)
Background factors						
Sex (ref.: boys)	0.50**	(0.41-0.61)	0.32**	(0.24-0.42)	0.29**	(0.19-0.41)
Family structure (ref.: lives with both parents)	1.13	(0.95-1.35)	1.02	(0.81-1.29)	1.09	(0.82-1.44)
Mother education	0.93**	(0.88-0.98)	0.96	(0.90-1.03)	0.96	(0.88-1.05)
Father education	0.97	(0.91-1.04)	0.91**	(0.85-0.97)	1.01	(0.91-1.11)
Family financial status	0.97	(0.91-1.04)	0.93	(0.85-1.03)	0.81**	(0.72-0.92)
Not attend school in the area (ref.: yes)	1.03	(0.78-1.36)	0.99	(0.72-1.38)	1.01	(0.72-1.43)
Residential move last 12 months (ref.: not moved in last 12 months)	1.44*	(1.04-2.00)	1.39	(0.93-2.07)	1.45	(0.90-2.32)
School change last 12 months (ref.: not changed schools in last 12 months)	0.74	(0.48-1.14)	1.01	(0.63-1.62)	1.42	(0.90-2.22)
Random effects	Var. comp.	χ^2 (df)	Var. comp.	χ^2 (df)	Var. comp.	χ^2 (df)
Intercept u_0	0.110**	187.74 (138)	0.226**	205.45 (139)	0.07*	175.86 (138)

*p < .05, **p < .01.
OR, odds ratio; CI, confidence interval; df, degrees of freedom.
[†] Zero time bullying behavior versus once during last 12 months.
[‡] Zero time bullying behavior versus twice during last 12 months.
[§] Zero time bullying behavior versus 3 times or more during last 12 months.

Similarly, students who reported experiencing victimization demonstrated more significant and increasingly powerful relationships with community and family factors as odds of victimization increased.

Disliking school and teachers increased the odds of young people choosing group bullying behaviors and experiencing victimization. Our results support previous findings that emphasize the importance of school climate,[8,11] young people feeling connected to school,[7] and school-based interventions.[1-4] Both students involved in group bullying behavior and students who experienced victimization were more likely to report disliking school and their teachers. Being disconnected from teachers and school placed students at much higher risk than any of the other variables considered in the study. Although the cross-sectional nature of this study prevents us from determining cause and effect, evidence from other studies suggest that strengthening school climates and school connectivity helps reduce odds of bullying behaviors and promotes victims' pursuits of adult and peer assistance.

Higher levels of peer connections increased the odds of group bullying behavior while higher levels of peer support were a protective factor for young people experiencing victimization. Findings related to peer connectivity and support were mixed. Students who reported ''knowing more kids in their community'' were more likely to participate in group bullying behavior than students who reported knowing ''less kids.'' Previous studies suggest a positive relationship between popularity and bullying behavior.[20] Similarly, our findings suggest that students who report greater levels of peer social connectivity are more likely to participate in group bullying behavior. Additionally, our findings suggest that students who were routinely victimized seemed to receive a protective benefit associated with peer support. Although this relationship appears modest, it still implies the value of including peer support strategies in bullying interventions.

Community-level characteristics influenced odds of group bullying behavior and experiencing victimization. Multilevel analysis showed that the odds of student involvement in group bullying behaviors and experiencing victimization were related to community-level characteristics in addition to those at the individual-level. This finding supports the efficacy of intervention strategies designed to intervene at both the

Table 3. Multilevel Correlates of Bullying Victimization - Logistic Regression Models With Odds Ratios and 95% Confidence Intervals

Model Individual Level Fixed Effects	Victimized 1[†]		Victimized 2[‡]		Victimized 3[§]	
	OR	(95% CI)	OR	(95% CI)	OR	(95% CI)
Parental factors						
Parental connectedness	1.01	(0.99-1.03)	1.01	(0.98-1.03)	1.03*	(1.01-1.06)
Parental monitoring	0.97	(0.90-1.05)	0.93	(0.85-1.03)	1.12**	(1.03-1.22)
Parental support	0.94**	(0.91-0.97)	1.02	(0.97-1.05)	0.91**	(0.87-0.99)
Time spent with parents	0.98	(0.92-1.04)	1.02	(0.93-1.12)	1.04	(0.97-1.10)
School factors						
Dislike attending school	2.09**	(1.62-2.70)	3.80**	(2.57-5.64)	5.73**	(4.06-8.09)
Relationship with teachers	1.03	(0.93-1.14)	1.11	(0.95-1.30)	1.04	(0.93-1.17)
Peer group factors						
Knows other kids in the area	1.00	(0.96-1.04)	0.96	(0.92-1.01)	1.01	(0.96-1.06)
Peer support	0.98	(0.95-1.02)	1.00	(0.95-1.05)	0.96*	(0.93-0.99)
Community factors						
Intergenerational closure	0.97	(0.93-1.02)	0.96	(0.90-1.01)	0.91**	(0.86-0.96)
Neighbors intervene	1.01	(0.98-1.03)	0.98	(0.94-1.02)	1.00	(0.97-1.03)
Anomie (Normlessness)	1.02*	(1.00-1.04)	1.03**	(1.01-1.06)	1.02	(1.00-1.04)
Background factors						
Sex (ref.: boys)	0.82	(0.63-1.06)	0.72	(0.47-1.09)	0.48**	(0.35-0.66)
Family structure (ref.: lives with both parents)	1.10	(0.86-1.42)	1.23	(0.90-1.69)	1.55**	(1.18-2.03)
Mother education	1.01	(0.93-1.10)	0.94	(0.85-1.05)	0.96	(0.89-1.05)
Father education	1.03	(0.96-1.11)	0.97	(0.87-1.10)	1.02	(0.94-1.11)
Family financial status	1.01	(0.90-1.13)	1.03	(0.90-1.18)	1.00	(0.90-1.12)
Not attend school in the area (ref.: yes)	0.82	(0.62-1.10)	0.58*	(0.34-0.99)	1.27	(0.90-1.80)
Residential move last 12 months (ref.: not moved in last 12 months)	1.61*	(1.03-2.51)	1.86*	(1.10-3.13)	1.44	(0.94-2.21)
School change last 12 months (ref.: not changed schools in last 12 months)	1.34	(0.81-2.22)	1.21	(0.67-2.19)	1.88**	(1.19-2.95)
School level fixed effects						
Anomie (Normlessness)	1.12*	(1.02-1.23)				
Random effects	Var. comp.	χ^2 (df)	Var. comp.	χ^2 (df)	Var. comp.	χ^2 (df)
Intercept u_0					0.131*	167.66 (135)
Dislike attending school u_{11}					0.113*	165.64 (135)

*$p < .05$, **$p < .01$.
OR, odds ratio; CI, confidence interval; df, degrees of freedom.
[†] Zero time bullying victimization versus once during last 12 months.
[‡] Zero time bullying victimization versus twice during last 12 months.
[§] Zero time bullying victimization versus 3 times or more during last 12 months.

school-level and community-level by promoting community characteristics that protect students from bullying. However, our findings offer little guidance about which community level characteristics represent the best targets for intervention and suggest prioritizing further research in this area.

Additionally, in some of our analyses we observed discrepancies between analyses in models 1, 2, and 3 within group bullying behavior and experiencing victimization, respectively. For example the odds ratios for parental support and bullying behaviors in models 1 and 3 were significant with ORs of 0.97 and 0.95, respectively but a nonsignificant finding for model 2. Although, our analytical strategy was designed to evaluate changes in these variables as students chose or experienced higher rates of group bullying or victimization, we are uncertain that some of the nonsignificant ORs in model 2 are because of actual differences between models 1 and 3. The reasons for this seeming discrepancy are more likely related to the difference in (1) sample size among the three subgroups (ie, once, twice and 3 times or more); (2) the difference in sample variation; and (3) random response bias. Furthermore, because we are operating with linear measures in our multilevel logistic regression models, which are generally a more powerful statistical approach than categorical analysis, small differences in odds ratios are usually observed because of the range of each scale.

Limitations and Strengths

This study has several limitations. First, the cross-sectional nature of the data precludes us from attributing cause and effect. As with all cross-sectional studies, the temporal order of events remains a largely unsolved problem. Second, our analyses relied entirely on self-reports and question responses reflect the retrospective perception of participants. Therefore, we are unable to guarantee responses without foundation. Additionally, we used this approach when assessing both individual and multilevel factors. It is possible

there are other ways of measuring these variables that might add to our understanding the factors and processes in question. For instance, although for the purposes of this study we were most interested in student perceptions of intergenerational closure, it might help if other researchers measured intergenerational closure using different methods, perhaps parent or other adults' perceptions of intergenerational closure. Third, the coding of the dependent variables in our study is somewhat unusual given previous research in this area. On the other hand our choice of coding is also an important part of our study emphases. Fourth, due to Iceland's homogeneity the general representativeness of the reported findings should be confirmed in different contexts. Fifth, given the large number of variables included in our models, we are unable to rule out the possibility of cross-level confounding. Finally, although the questions we used to measure group bullying have been used in other peer-reviewed studies[19] they may not sufficiently differentiate between group bullying and group violence more generally.

This study also has several strengths. First, we utilized a large and representative sample with high response rates. Bias in our data due to selection is therefore highly unlikely. Second, the data for this study is part of a 15-year series of cross-sectional school-based data collection using the same protocol annually. Third, the nature of our statistical modeling enabled us to directly model the variance in intercept and slopes instead of averaging it out as in traditional regression analyses, thereby providing further evidence for the added value of nested data structures in adolescent bullying behavior research.

Conclusions

Developing interventions that successfully reduce group bullying behaviors and victimization has proven difficult.[1-4] This study investigated the role that strategies designed to increase community and family connection, closure, and support might play in protecting young people from involvement in group bullying behavior and experiencing victimization. These findings support the importance of current efforts to improve school climate and school connectedness while suggesting an important supplemental role for efforts to increase family and community connection, closure, and support. These findings suggest that school, family, and community connection, closure, and support become exponentially more important as young people increase involvement in group bullying behavior and experience victimization. Students who showed the highest odds of group bullying behavior and students who experience the highest odds of victimization both appear to benefit from increased school, family, and community connectivity, closure, and support.

IMPLICATIONS FOR SCHOOL HEALTH

We believe it is important to move beyond the assumption that schools are solely responsible for solving bullying related problems and toward a conversation that (1) acknowledges the influence of community and family factors; and (2) engages all parties in the work of creating environments in which bullying is unlikely. School-based interventions are essential, but current evidence suggests that schools are unlikely to reduce group bullying behaviors and bully related victimization without community and family support and involvement. This position does not minimize the role of schools. Schools are critically valuable institutions that should be adequately supported by the communities they serve. Our findings suggest that school professionals, parents, community members, and young people themselves must all play important roles in reducing the prevalence of group bullying behaviors; and that failure to address bullying by any of these parties may needlessly undermine efforts to reduce bullying behaviors.

Our findings also provide preliminary evidence suggesting specific ways parents may help schools intervene. On the basis of our findings, it seems reasonable to encourage the parents of students who are engaged in group bullying behaviors to increase the amount of time they spend with their children, to talk with their children openly about socially acceptable ways to relate to others, to extend support and assistance to their children without condoning bullying behaviors, to help their children establish better relationships with their teachers and school, and to increase communication and co-monitoring with other relevant adults. Further, it seems reasonable to advise the parents of victimized children to offer increased support and assistance to their children, to encourage their child's relationships with supportive peers, and to increase communication and co-monitoring with other relevant adults without over-monitoring their child. However, based on the modest nature of these relationships, we also suggest helping parents develop reasonable expectations concerning these strategies. In short, it is unlikely that family-based strategies alone will solve their child's problems related to group bullying and victimization, but instead, that these family-based strategies may be a beneficial component of a more comprehensive solution.

Results also suggest a possibly counterintuitive approach to group bullying. They suggest that students who are involved in group bullying behaviors are perhaps not simply ''bad kids'' in need of discipline, but may be instead—at least in part—young people who need to be surrounded with attention, support, and instruction. We are not suggesting that children who choose bullying behaviors do not benefit from

clear boundaries and limits. We are certain they do. We are, however, suggesting that punishment and other strategies that further isolate already disconnected young people may exacerbate the problem.

Finally, our findings provide further empirical evidence that the frequency and relative intensity of group bullying behaviors and victimization matters.[14,15,34] There are legitimate differences between children who are involved in group bullying behavior once and those who develop a pattern of bullying behaviors. Additionally, there are legitimate differences between children who are hurt once and those who are routinely victimized. As a result, it seems reasonable to assume that students participating in different levels of bullying behaviors may require different intervention strategies. At a minimum, it seems prudent to connect students engaging in moderate to high levels of group bullying behaviors and experiencing routine victimization to a range of pro-social sources of adult support and assistance in their schools, families, and communities.

Human Subject Approval Statement

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